

Doctor WHOO

MAGAZINE

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**AUTUMN
SPECIAL**



DESIGNER SPECIAL!

Includes

BEHIND THE SCENES -

Photo Feature of rare photographs

THE NEW TITLE SEQUENCE

COSTUME AND SET DESIGN



Contents

The Seventh Doctor wears a linen jacket, tweedy check trousers, a colourful slip-over sweater with the Doctor Who question marks (based on a 1930s golfing sweater), a soft shirt, red braces, a red paisley tie, brown shoes and a panama hat.

'I came up with three or four designs from which this one was chosen. John Nathan-Turner dictated Sylvester's image. He wanted to break away from the way Colin Baker and Peter Davison looked – they were both very striking. Sort of 'Gosh! What's that?' With Sylvester, he wanted something that looked interesting but wouldn't make people freak out if he was walking down the street.

'All the items were made by our department, except the panama hat which was bought and then retrimmed

KEN TREW,
Costume Designer



Editor: **Sheila Cranna**
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The Doctor Who Special

has been researched and written by Patrick Mulkern.

Our thanks to the *Doctor Who* Production Department for their cooperation and help in preparing this Special.

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DESIGNS

In the early days of *Doctor Who*, set design was particularly vital to the atmosphere and credibility of the show. Locations in the far flung future on alien worlds had to be imaginative, weird and enchanting, while the regular forays into the history of our own planet needed much research for accuracy.

The junkyard at 76 Totters Lane was the very first set to appear in *Doctor Who*. The script required a street and pavement 'exterior', a pair of heavy entrance gates, and a ramshackle interior, cluttered with all manner of bric-à-brac, including a police box.

The designer involved – the late Peter Brachaki – had to consider exactly how the set should appear on screen, what movements would need to be made within it, and how large it could be, bearing in mind the low budget available and that two other sets (including a very large TARDIS control room) also had to fit a relatively small Lime Grove studio.

Deception is a key virtue in the art of a designer: whatever detail viewers cannot pick out – on their TV screens, the designer can get away with implying. This was particularly the case with low definition black and white 405-line cameras used in the Sixties, when sets could be fairly rough and simple, and many corners could be cut. In the case of the junkyard, the cobblestone ground was simply a painted pattern on the studio floor. One frequently used method of conveying atmosphere and depth was to shroud a set's boundaries in darkness, and allow wisps of CO² to drift before the cameras.

Raymond Cusick handled a great many of the SF episodes, while Barry Newbery tackled those which were

historically based. Both men showed great versatility; Cusick's claustrophobic confines of the Dalek city from *The Dead Planet* had a tremendous on-screen impact and perfectly complemented the Daleks' own appearance. Cusick also designed the petrified forest in which the TARDIS landed – *Doctor Who*'s first sight of an alien environment. Although very small, careful positioning of foliage and a painted backdrop gave the forest greater dimensions.

Newbery's involvement began on the very first story, when he designed the palaeolithic landscape of the cavemen. Considering budget and space restrictions, the resulting sets were a triumph. The Cave of Skulls, strewn with cleft skulls, and the frozen wastes where the TARDIS came to rest spring to mind.

He also provided beautiful sets for several other historicals, including *Marco Polo*, *The Aztecs*, and *The Crusade*. *Marco Polo* concerned a trek across ancient China, calling for changes in sets from week to week – Newbery saved money by keeping the same set structures, but incorporating into them more and more ornaments and props as Marco Polo neared his destination.

Cusick embellished Peter Brachaki's original TARDIS design (see TARDIS feature) for *The Brink Of Disaster*, which called for a much larger control room and adjoining crew quarters. Unfortunately, the result was uninspiring to say the least – with far too many blank walls and spartan chambers, with beds which looked incredibly uncomfortable. *The Keys Of Marinus* called upon all the designer's reserves – with changes in location from week to week; with a glass beach, a pyramid, a huge Conscience machine, a jungle, a court room, and snowy wastes all springing effectively into reality.

Doctor Who's first spaceship, in *The Sensorites*, was a curious affair – antiquated technology and black

riveted bulkheads lent Gothic appeal, sadly let down by poor direction which made it painfully obvious to viewers just how small the sets were. (As a money saving measure, sections of this set were re-used six months later for another spaceship in *The Rescue*.) The interiors of the Sense Sphere were an exercise in symmetry – creating another superb alien environment, with a city of domes and spires – indeed Cusick tried to design out all straight lines and right angles.

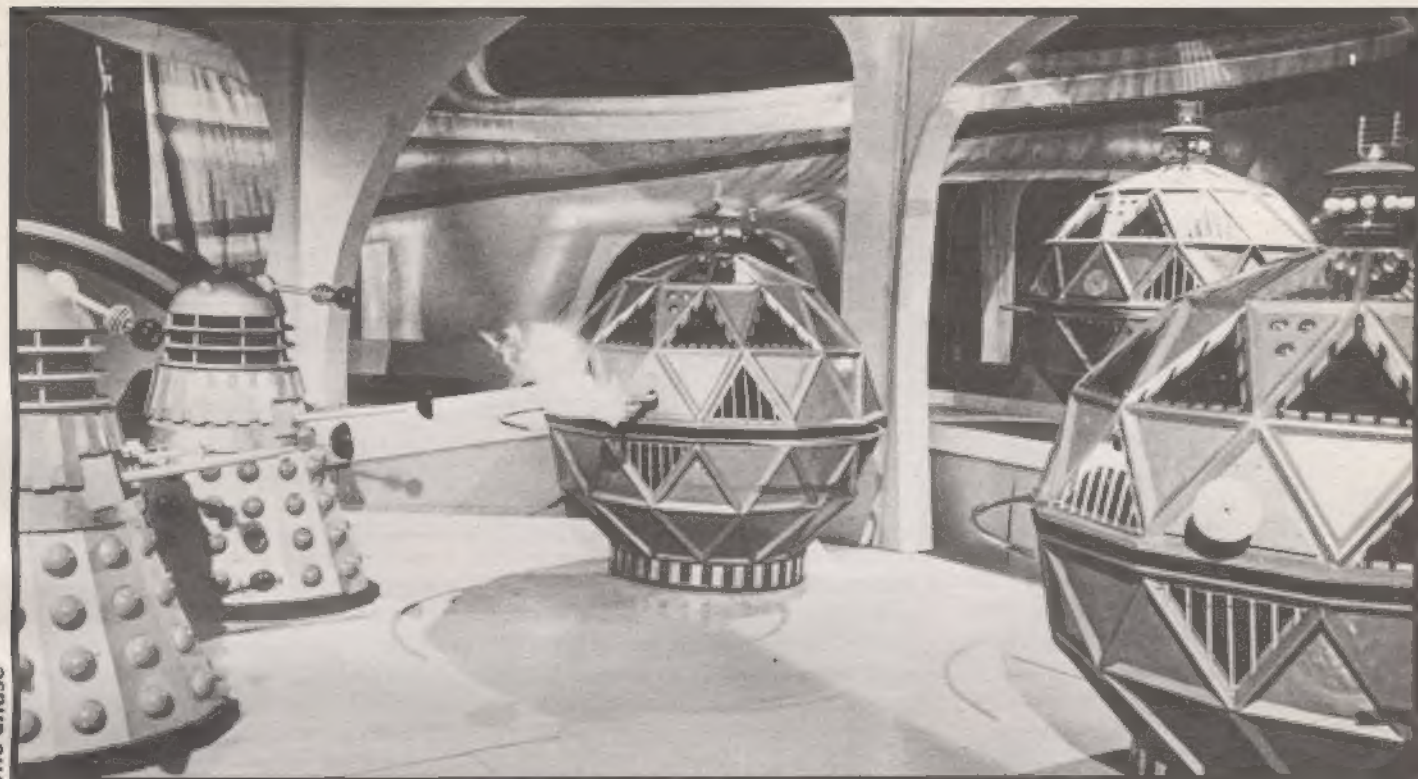
There were many other impressive sets in the early days of *Doctor Who*. Spencer Chapman came up with a mock-up of Chelsea Heliport for *The Dalek Invasion of Earth*, which again had to give the impression of great size and include a section of the Dalek's flying saucer.

The Web Planet in 1965 was a peak for the design department, with a supremely eerie lunar landscape for the planet Vortis. However, despite John Wood's efforts, the evocative setting was let down by materials. Indeed, by the final episode, after six weeks' use, the wooden ground was cracked alarmingly – as were the fibreglass Zarbi suits.

Expensive stories like *The Web Planet* and *The Chase*, involving a lot of imaginative sets and hardware, caused other shows to be put together on a shoestring. *The Rescue* and *The Space Museum* were two such casualties. A miniscule budget was overcome in *The Time Meddler* by reliance on stock film footage to establish the Northumbrian location, and dramatic back projection of stormy skies. Barry Newbery also made the small sets on different levels, so that a cliff top led down to the crumbling entrance of a monastery. A small flat of another medieval building was erected at the rear of the set to give more depth.

Raymond Cusick's final work on *Doctor Who* was *The Dalek Master Plan*, the 12-part epic considered by

ON WHO



The Chase

many to be the definitive *Doctor Who* adventure. He shared the load with Barry Newbery, working almost on alternate episodes. The most striking elements contributed by Cusick were the jungles on Kembel and Mira, the matter transfer chamber on Earth, the various Dalek bases and the UGH conference chamber.

Newbery had the very difficult task of realising the interior and exterior of an Egyptian pyramid still under construction. As you will see from the design checklist, Barry Newbery returned to work on the programme intermittently for the next 20 years – last working on *The Awakening* in 1983. He retired from the BBC in 1986.

From the mid Sixties, the range of designers involved became much more diverse. John Wood created the surreal 'playroom' nightmare of *The Celestial Toymaker*; Derek Dodd designed the mercury swamps of Vulcan, and the excellent space

capsule in *The Power of the Daleks*; and *The Underwater Menace* featured Jack Robinson's impressions of Atlantis with the vast Temple of Amdo and an 'underwater' grotto for the dance of the Fish People.

As with the Daleks, the Cybermen's stories were enhanced by set design appropriate to their image. Colin Shaw designed *The Moonbase*, a continuous set with different working areas and sets within sets, the Gravitron device suspended from the studio ceiling, and a section of glass dome which looked out onto the Moon's surface.

Forced perspective was used when the Doctor stepped out of the TARDIS onto lunar soil and pointed at the Moonbase in the distance: it was in fact a model a few feet away. *The Tomb of the Cybermen* again is remembered for the superb impression made by the 'hive' set from which the frozen Cybermen awoke. It was a huge bank of man-sized cavities on

five levels, connected by steel walkways and ladders. It emphasised precisely the awe-inspiring might of its occupants.

Until 1967, it remained the responsibility of the designers to devise all the hardware and effects – such as the Mechanoids, the War Machines, and the Chumblies – which would then be constructed by Shawcraft Models Ltd. By the time of Patrick Troughton's Dalek stories, the BBC had established its own Visual Effects department, who took a massive load off the designers' backs, notably by building a brand new set of Daleks and creating a *Doctor Who* legend – the Emperor Dalek.

Naturally in retrospect from the hi-tech Eighties, some of the early sets have dated alarmingly. Computer terminals, scientific gadgets and weaponry have lost any sophistication they might have borne at the time. Even the splendid original ▶

DESIGNS ON WHO

◀ TARDIS console, with its banks of dials, meters and levers looks painfully antiquated by today's touch-sensitive, computerised, micro-chip standards.

The Web Of Fear featured such convincing mock-ups of tube stations and tunnels that London Transport contacted the BBC to ask how they had dared to film in the Underground without their permission. David Myerscough-Jones made the tunnels in sections which could easily be reconfigured to seem like a different area. The platforms, again with boundaries obscured by darkness, were in fact one very short set which could be redressed and have new name plates inserted.

The late Sixties benefitted from some sophisticated design. *The Dominators'* spaceship by Barry Newbery holds up well today. One of the most startling images from 1968 was the white void in which the TARDIS was trapped, as a prelude to the Doctor's meeting with *The Mind Robber*. It was simply Studio 3 at Television Centre, completely empty, with the floor painted white and a huge white cyclorama hanging at the back of the studio.

The conclusion of *The War Games* gave the first insight into the strange realm of the Time Lords. The name Gallifrey would still not be mentioned for five years, and an atmosphere was created totally at odds with the impression given today. The trial 'room' was black with dim, undefined outlines and had steps leading down to a series of spotlit podiums, on which the prosecutors and defendants stood.

1970 saw the introduction of colour in to the show, and the possibility of applying a new boon in special effects – CSO – to cut down on the number of sets required. If an actor could be superimposed onto a still picture or painting, why go to the lengths of building a set or paint a backdrop? An early example was the Doctor's entry into the alien craft in *The Ambassadors Of Death*. The process (see feature) was still primitive and its use was fortunately kept to a minimum. It was adopted with moderate success in *Terror of the Autons* for the scenes supposedly shot at the top of a radio telescope.

The Jon Pertwee era called for a wide number of Earthbound settings. Many stories were set in scientific research bases – and each had to look completely different. *The Silurians* had an underground cyclotron centre and a superb set of caves (Barry Newbery again); *The Ambassadors of Death* required a space centre, decked out with control consoles and a bold mixture of variously sized CSO display screens. A peculiar wobbly elevator entered the chamber halfway up the rear wall, from which descended a wide L-shaped staircase. It was an intriguing feature but quite pointless.

Inferno and *The Mind Of Evil* called for two large continuous sets, intended to represent whole sections of a building, with rooms which led sensibly from one to another. In most stories, the sets would be dotted about disjointedly wherever they could best be fitted. Jeremy Davies' *Inferno* drilling project was perhaps more successful than Raymond London's Stangmoor Prison.

Just as the dimensions of the TARDIS interior had changed in the Sixties, the Third Doctor's 'home', his laboratory at UNIT, would be different from story to story in the early Seventies. The size of any 'regular' set of this sort would have to fit in with space available in the studio and the desires of the designers. A total of ten laboratories, slightly or radically altered, appeared between *Spearhead From Space* and *Robot*.

The Claws Of Axos featured one of the most imaginative and successfully realised sets in the programme's history. Again it was a case of the cheap and cheerful looking a million dollars on camera. The lurid pulsating walls of Axos evoked the feeling of being inside a living organism; a network of intestines.

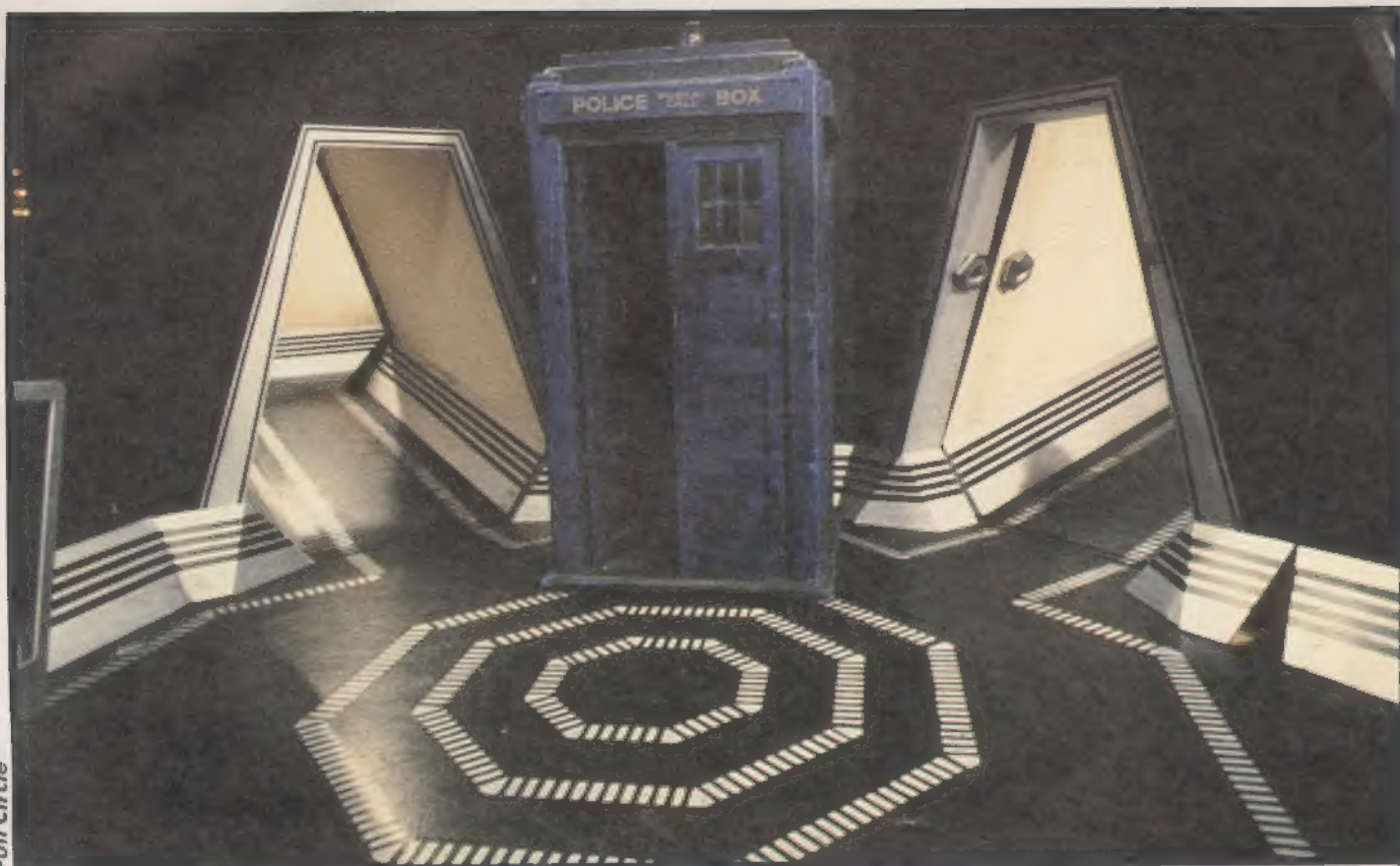
Other designs which remained vividly in the mind were the supremely spooky sea fort by Tony Snoden for *The Sea Devils*, the stage-like meeting place of Atlantis in *The Time Monster*, the Welsh mine in *The Green Death*, and the colourful mish-mash of giant circuitry inside the MiniScope in *Carnival of Monsters*. Doctor Who's first female designer, Gloria Clayton, worked on Pertwee's two Peladon stories, maintaining uniformity in the Medieval castle trappings.

Had *Planet of the Daleks* been made in the black and white days, the jungle sets of Spiridon would have been fine, but in a brightly-lit studio on 625-line colour videotape, the sets were dreadfully unconvincing. There was an additional problem with the jungle floor, which had to be flat for the Daleks to move across it. Sadly by today's standards, BOSS, a giant computer which took up a whole floor of Global chemicals in *The Green Death*, is remarkably out-of-date, with banks of computers with spinning tape spools.

Little of note came to the fore in the



Timelash



later Pertwee stories. It seemed that the more alien/futuristic sets were required, the less credible a brightly-lit studio-bound production would be. The city in *Death To The Daleks* and the village in *Planet Of The Spiders* were particularly stagey – completely detracting from the solid grittiness common to the Third Doctor's earlier adventures.

Tom Baker's first season was a curiosity, in that one story, *The Sontaran Experiment*, featured no sets at all (it was shot entirely on location) and two other stories had to share the same sets. They were *The Ark In Space* and *Revenge Of The Cybermen*, both set within the claustrophobic confines of Nerva Beacon. Roger Murray-Leach was the designer.

A CSO set was constructed for the breath-taking corridors which ran around the perimeter of the Ark, with massive 'glass' panels looking out into the depths of space. One seemingly vast set, which was only required for *The Ark In Space*, was the cryogenic chamber, in which rank upon rank of cubicles housed sleeping humans. The cubicles were vacuum-formed in fibreglass.

Terror Of The Zygons featured another organic spaceship, similar to Axos, with lurid, fleshy walls and

control terminals which looked as if they had been grown rather than manufactured. *Planet Of Evil* was a breakthrough in design terms for *Doctor Who* with, for once, a very convincing jungle set. Roger Murray-Leach was helped no end by the allocation of filming time at Ealing Studios, which facilitated a larger set and much more control over what was to appear on screen, film ultimately affording greater depth and credibility than video recording.

The remainder of the Thirteenth Season, renowned for its horror content, had some suitably Gothic designs, particularly Solon's cluttered and uninviting home in *The Brain Of Morbius*. Depicting the snowy wastes of the Antarctic was also a triumph for Roger Murray-Leach, who dressed his fabulous studio landscape with heaps of polystyrene flakes.

Moving on through the Seventies, *The Masque Of Mandragora* boasted some superior designs by Barry Newbery for the Renaissance-style court chambers and some very dank and atmospheric subterranean areas. *The Deadly Assassin* irrevocably lifted the lid on the Time Lord myth, showing them as a decaying society, and Murray-Leach's sets, especially

the Panopticon, reflected a mixture of grandeur and ruin, ceremony and corruption.

For *The Robots Of Death*, Kenneth Sharp went for an art deco look, with brightly coloured, richly furnished quarters for the Sandminer crew. The flight deck was built on several different levels and backed by a huge CSO screen, onto which computer-generated patterns and data could be superimposed. The story also made use of two detailed glass shots (see Special Effects feature), to add extra dimensions to the ore hopper area and for a very effective shot of Robots on the flight deck – seen through a window in the Sandminer's exterior.

Roger Murray-Leach's last assignment for *Doctor Who* was *The Talons Of Weng Chiang*. He was highly praised for his studio mock-ups of Victorian London, particularly the network of sewers, but he found the six-episode slog a punishing schedule, and asked not to work on the show again. He has now left the BBC and gone on to further acclaim, his name appearing on the credits of feature films that include *Local Hero* and *The Killing Fields*.

A breakdown in communication evidently occurred in *The Invisible Enemy* between the Design Dept. and Visual Effects. In one scene K9 had to



The Leisure Hive

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blast a hole into a wall but a huge split, which had been rigged up previously, was obvious throughout the sequence leading up to that point.

The late Seventies were a time of stringent budgetary controls for the BBC, with fewer funds available for normally lavish drama productions. *Doctor Who*, especially competing with *Blake's 7* for gifted set designers and visual effects people, suffered most noticeably on screen. A combination of flimsy scripts and cheap sets meant a down-grading in the quality of Tom Baker's later adventures.

Underworld boldly attempted to CSO actors into painted caves and tunnels for at least one third of its

duration. The results were appalling, with actors' feet and the Doctor's scarf unintentionally disappearing from view. More successful was *The Ribos Operation*, which reused a batch of sets put into store after the BBC's superb adaptation of *Anna Karenina*.

The Stones Of Blood showcased an intriguing hyperspacecraft, which looked as though it had been built for and by aliens. For *The Armageddon Factor*, Richard McManan-Smith had to realise three very different alien planets; the most successful being the funereal domain of the Shadow. He also produced the primeval landscape at the dawn of mankind in *City Of Death*.

The Horns Of Nimon brought to a close a difficult period for *Doctor Who* and touched the nadir in contributions from perhaps every production department – including

design. The sets were wobbly and noisy, in parts garish, in other respects bland, and the use of CSO reached an abysmal low.

The Eighties brought a quantum leap in the look of the show, under the aegis of new producer John Nathan-Turner. *The Leisure Hive* was a pinnacle of studio design, with sets which for once created a three-dimensional effect, with allowance given for ceilings (very rare for the BBC). Some sets also had exteriors, so a camera could observe action in the Argolin Board Room from the radioactive atmosphere outside the Hive and follow the progress of the Foamasi.

Meglos saw the introduction of a much larger TARDIS control room and the first use of a new type of video effect, which allowed cameras to pan across models while actors were being CSOed onto the image.



This worked extremely well for the sequences around the screens of Zolpha Thura.

Other impressive designs in this season were the Great Book Room of the Starliner in *Full Circle*, the blood-red sets of Vampire Lords' Tower in *State Of Decay*, the Tharils' cobwebbed banqueting hall seen in *Warriors' Gate*, and Tony Burrough's excellent detailed sets which lent total credibility to the Traken civilisation. *Logopolis* was rich in mythos – showing the Cloister Room (the Fourth Doctor's sanctuary in the TARDIS), and the intriguing maze of streets and alcoves on Logopolis, in which sat the dedicated mathematicians.

Janet Budden explored the TARDIS yet further in Peter Davison's debut story, with the pink and peaceful Zero Room, Tony Burrough created more detailed interiors for the Urbankan spaceship in *Four to Doomsday*, and the following story, *Kinda*, displayed one of the show's best considered jungle sets, although inevitably the studio floor made its presence clear on several occasions.

Earthshock came the nearest of any *Doctor Who* story to an epic, and

looked in parts as if it had been given a film's budget. Designer Bernard Lloyd-Jones and director Peter Grimwade did wonders, making so little stretch so far. The caves on future Earth and the cavernous hold of the freighter were utterly convincing, and perfectly suited to the tense action.

A weakness of many TV productions in the Eighties is studio lighting; too many shots are let down by mishandled or too bright lighting. Inevitably *Doctor Who*, with the enormous range of sets required week in week out, has suffered in this respect. *Time Flight* was a case in point, suffering from an appalling mauve primeval heath, which looked just like a dressed corner of the studio. Poor lighting also engendered a hopelessly artificial marketplace in *Snakedance*. *Terminus* suffered similarly in parts, but was more than compensated for by the excellent design on the leper ship, with gruesome death masks spray-painted on the walls.

The opening of *The King's Demons* utilised the glass shot technique to add a high ceiling to the banqueting hall of Fitzwilliam Castle – a technique used in exactly the same way in

The Five Doctors for the tomb of Rassilon. This was a particularly massive set, consuming a large area of the studio, parts of which were later redressed with new columns and partitions for other Tower sets, for instance the 'chessboard' on which the Master despatched a band of Cybermen.

The dingy, claustrophobic sets which had so enhanced the Silurians and the Sea Devils on their first appearance in the Seventies were sadly lacking on their return in *Warriors of the Deep* in 1984. Tony Burrough's Sea Base sets were magnificent, but far too large and too brightly lit – making the reptilian invaders artificial and tacky.

By contrast, later on in the same season, Peter Davison's final story featured a fine batch of sets. John Hurst's cave system beneath Androzani Minor had great depth, losing all feeling of a confined studio, and Graeme Harper's imaginative camera angles lent even more reality. Morgus' suite on Androzani Major was colourfully futuristic, and featured broad windows, which surveyed the oceanic planet outside.

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◀ The 'view' actually comprised two simple hardboard flats propped up about two feet from the glassless windows and lit from above. Another deception was the lift shaft down which Morgus pushed the President. Of course, the design team could not bore a hole into the foundations of TV Centre; the scene was achieved by careful camera angles. The floor where the shaft ought to have been was a black-painted square.

Colin Baker's first full season featured a wide range of designs – from period Earth settings, coalmines and sewers to torture chambers, Cyber-tombs and the Time lash. For *Attack of the Cybermen*, Marjorie Pratt had to devise a London sewer system, two Cybermen bases, a new style of Cybertomb and a subterranean world for the Cryons.

Vengeance on Varos had a pervading sense of oppression enhanced in many instances by the work of Tony Snoaden. The subverted society of Varos was successfully established despite the fact that the story was entirely studio-bound and used no more than a dozen sets.

At the other end of the scale, *The Mark of the Rani* had a great deal of exterior filming, and required only one three-day session in Television Centre. Nevertheless, its interiors were richly appointed – notably the Rani's TARDIS, complete with gyroscopic time rotor, and Stevenson's workshop, complete with rocket!

Two appalling sets marred parts of the next two stories – namely the space station infrastructure in *The Two Doctors* and the Time lash, in the story of the same name, which appeared to be made up of polystyrene, balsa-wood and tinsel.

The most recent season was of course *The Trial of a Time Lord*, which encompassed three very different stories. The binding link, the Time Lord Trial Room, might perhaps have been a little more imaginative, considering it was used in all 14 episodes. Its imitation of the style of the British courtroom was not appreciated in some quarters – *The Prisoner*-like court in *The War Games* might have been a better forum. Nevertheless this season did feature an assortment of very imaginative sets.



The Keeper of Traken

The Mysterious Planet was allocated to John Anderson, who designed the Trial Room used here and throughout the season, and the underground world of future Earth. His realisation of the ruined Marble Arch tube station was superb, with its delapidated escalator (surely the shortest in existence!). The subway tunnels in Drathro's underground base were constructed from several steel framework sections, about ten feet long and filled with corrugated plastic, which could be reconfigured any number of times, to give the illusion of many different tunnels.

Mindwarp transported us to Sil's home world, where the most impressive set was Crozier's laboratory. It was unusually spacious, and 'off-set' looked like a huge tent, because the walls were actually canvas and tapered upwards like an umbrella to a point high in the studio.

In the centre was mounted a bulky column of surgical apparatus, which led down to three operating tables. Andrew Howe-Davies had the assistance of video illusions to embellish his sets – including glass shots and the paint box. During the scenes re-

corded in Kiv's quarters, two slide projectors were set up behind a translucent rear wall, to lay in a series of geometric patterns.

For the Vervoid story, Dinah Walker had to design the interior of a space liner, the *Hyperion III*. The reception and the lounge were very attractive, and these sets, together with the gymnasium, had a large blue cyclorama suspended above them, so that the cameras could film above the top of them, and then, in post production, a starfield could be keyed in with CSO.

Even the corridors had a lot of time and effort spent on them: they were simple hardboard, but dressed thoughtfully and adorned with some stunning out-of-this-world paintings. As so many sets were required, some corners had to be cut: the cabins were little more than a two-wall set and one wall of the liner's hold was in fact the perimeter of the studio.

Who knows what the future holds for *Doctor Who*? The Twenty-Fourth Season has already been embarked upon, with fresh designers already thinking up new and dazzling environments for the TARDIS to land in. ●



One of *Doctor Who*'s great success stories was K9 – a cute all-purpose computer/companion/weapon, which won the hearts of young viewers. When in full working order, K9 could rescue the Doctor from any predicament he'd stumbled into – which unfortunately meant the robot dog became a rather too convenient plot device for writers.

Although K9 remained ostensibly unaltered on screen, the storylines featured the character in three different models – Marks I, II and III, and, as a working prop, K9 underwent even more changes in the hands of Visual Effects designers.

Ian Scoones made preliminary sketches of K9 on receipt of scripts for *The Invisible Enemy*, but it was Tony Harding who eventually conceived the design familiar today. K9 Marks I, II and III were all radio-controlled. Harding fitted the first with four-and six-channel Futuba sets, which allowed ten channels in the AM frequency to cover all of the machine's requisite movements. K9 had to move forwards, backwards, cope with corners, wag its tail, triangulate with its antenna, and have an extendable probe and gun nozzle.

However, problems arose almost immediately in the studio, when K9 was sent haywire by stray camera signals which were operating on a similar frequency. The situation could not be remedied straight away, so precautions had to be taken in K9's early stories to keep the two as far apart as possible.

The first K9 ran on an incredibly noisy chain motor and its agility was limited by rear-wheel drive. This version was written out in *The Invasion of Time*, to make way for a new model, Mark II, in the *Key to Time* season. The modifications included a much quieter rubber belt, front-wheel drive and a coating of charcoal grey paint over the previous gold.

Nigel Brackley – a radio-control specialist – was taken on full-time to operate K9 and ensure there were fewer hold-ups during studio recordings. The other people who were always on set were John Leeson and later David Brierley. They sat in a small booth with a TV monitor and a script and provided the 'voice of K9'.

Over the years, several small changes were made to K9, and many more on-the-spot repair jobs, for it was forever breaking down or running into scenery. For the stories *The Leisure Hive* to *Warriors' Gate*, K9's internal workings were completely rebuilt: a model racing-car differential was fitted, which provided drive on both front wheels (now much larger), without screeching at corners.



This innovation allowed K9 to move over bumpy surfaces and even go through the door of the TARDIS (*State of Decay*), which had never been seen before. Romana would always say, 'Come along, K9!' at which point the cameras would rise to conceal the fact K9 could not possibly obey the order. At the same time, the old AM remote control was switched to an FM model, being less susceptible to interference.

By 1980, the production team thought they had finally solved all K9's problems and boldly took it to Brighton for location filming. However, even a new caterpillar tread could not cope with the shingle beach, and K9 had to be pulled along by thin, barely visible wires.

A little known fact is that an empty fibreglass dummy also existed. It was brought into service whenever K9 had to be lifted, carried, and even thrown, viz. *Warriors' Gate*.

K9 Mark III, which appeared in *K9 and Company* and *The Five Doctors*, differed only from the previous models, in that handles were attached to its sides and it received a lick of metallic blue paint. ♦

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The Doctor's TARDIS has to be one of the most famous space vessels in television history, and certainly none has been more unusual. The exterior, based on the once familiar shape of a London Police Box, is one of the few items which has remained essentially unchanged since *Doctor Who's* inception in 1963. The interior of the TARDIS, however, has undergone several changes.

The original control room was designed by Peter Brachaki to be immediately impressive. A vast chamber, it had peculiarly patterned walls, two heavy doors and was dotted with bric-à-brac furniture and ornaments. The focal point was the hexagonal control console, with multi-levered panels and a splendid central column, the Time Rotor, which rose and fell and originally could rotate on cue.

The construction of the console was farmed out to Shawcraft Models of Uxbridge. For the first few stories, a large light source was suspended above the console but was eventually considered too cumbersome a prop to maintain.

To give the set a vivid white gleam on monochrome TV sets, the walls and console were painted a light shade of green. The walls were made of wood with vacuum-formed PVC bowls for the circular indentations. The doors, like all 'automatic' doors on television, were operated by studio hands but the closing mechanism often jammed in the early days and recording would have to stop while the situation was rectified.

The console prop has always been powered by a large cable running across the floor from the back of the set. Nowadays, the cable is thinner and can be disguised with sticky tape, but in the Sixties directors had to take great care with their camera angles to avoid showing it. Often it was unavoidable.

Until recent years, when the TARDIS interior has been standardised, the sets were always variable, depending on the director's requirements and how much space was available in the studio. Even in the first story, different views were given in episodes 1, 2 and 4! *The Daleks* gave viewers their first sight of a room beyond the control room; a rest area with a food machine.

Beyond The Sun is the only story set entirely inside the TARDIS, boasting the largest control room to date and

showing some rather spartan living quarters. This story also introduced a hexagonal floor plate surrounding the console, which made irregular appearances until *The War Games*.

The area of the set gradually diminished, until, during the later Troughton stories, it was seldom more than a small three-wall set, two of which would be photographic blow-ups. These walls were used well into the colour episodes of the Seventies, last appearing in 1972 in *The Curse of Peladon*.

A year before, in *The Claws Of Axos*, producer Barry Letts finally took the decision to update the console, to the design of Kenneth Sharp. Tim Gleeson gave the TARDIS walls a temporary up-date in *The Time Monster*, but the resultant 'washing-up bowl' design was not altogether popular – and featured in no other stories.

A sparkling new interior designed for *The Three Doctors*, restoring the original pattern, remained in various forms throughout the Pertwee and Tom Baker stories. Naturally, the years took their toll on the set, and in 1980 in-coming producer John Nathan-Turner gave the go-ahead for a brand new control room to be constructed. It debuted in *Meglos*, but because of the expense, a new console was delayed for another three years. Visual Effects man Mike Kelt described how he brought the TARDIS in to line with the Eighties.

"The department felt it'd needed a facelift for quite a while, and I suggested it to John Nathan-Turner just before *The Five Doctors*, and he said it seemed a very good idea to do it for the special. I made it so that it could be easily dismantled into several basic parts – the six fibreglass panels, an aluminium frame they slot into, the base and the column in the middle. We gave it a more functional look, with a lot more buttons and TV monitors – I was almost given *carte blanche* with it, although the producer insisted we retain the big red-knobbed door button." ♦



TITLE TATTLE

One of the most important elements in *Doctor Who* is the amazing title sequence which introduces every episode. There have been several changes over the decades, and we spoke to Oliver Elmes who has designed the latest version – to mark the arrival of the seventh Doctor.

Elmes, a most experienced designer, has been part of the Design Department at the BBC for over 20 years. During this time he has worked on a variety of programmes to package and promote the BBC's output for the public, culminating in his collaboration earlier this year with John Nathan-Turner, to develop a new title sequence for the forthcoming New Season, with Sylvester McCoy as the 're-generated' Doctor.

DWM: What's the first step in your work?

Oliver: First of all you get an idea which is acceptable to the producer, and then work out the best way of achieving it. You produce a storyboard and take it along to facilities houses that might be able to help you. You talk about what you want to do, the movements and the timing, how it will fit the music, the colour, and when events have to happen.

What kind of budget are you normally allowed for a title sequence?

That depends on the production. They don't usually set aside a great deal of money for graphics. Say you were given £900, well, you can't really do anything with that sort of money. They managed to find a lot more, but by outside standards that still wasn't much.

How did you approach the new Doctor Who titles?

It was a question of whether to use motion control and film 'live' action – proven technology – or to try

something computer generated – which is still very new and exciting but has limitations. Having been round to various computer houses and showrooms, there was one, CAL video, which had some very nice space effects which had been used for a Halley's Comet programme. They were very enthusiastic and helpful. It's funny but technology is changing all the time and they can do things now that they couldn't while I was there a few months ago. The facilities they provide are very expensive, but they look on the BBC kindly, perhaps because it's in their interests to be displayed on prime-time television, and they will do things for us at a cut rate.

How much time did you have to spend on it?

A very long time when you bear in mind that we have to feed the sequence into the computer a frame at a time, and that every frame takes up to 30 minutes to prepare.

So how many frames per second is that?

25. For *Doctor Who* we had 50 seconds for the opening sequence, and over 60 seconds for the close, so you can imagine the amount of time it takes. About half an hour per frame. Work that out!

Could you run through what actually happens, what the different components of the new title sequence are?

It begins with an enormous explosion, which produces lots of stars. We tried to create a three-dimensional universe, through which one could move. Several rocks zoom towards the screen followed swiftly by a swirling spiral galaxy, from which the TARDIS appears. Initially it's wrapped in this cloud-like formation, sharpening as it approaches, the idea being for the 'audience' to tumble over the top as it passes. It would be very effective on the cinema screen, but on a small tv set, you probably won't find it as

giddy. We tried to create that by actually having the TARDIS upside down, so that as you fall over it, you see the TARDIS the right way up, and as you do that, it changes from an amorphous shape within the bubble to the proper solid object. Then that spins away from you.

How do you feed the TARDIS into the picture?

You take the measurements from the model of the TARDIS and feed them into a computer. The computer then produces a line frame version of it, (a three-dimensional skeleton) which we can put through tests to see if it'll work out. Having got that, the computer operators render it on a monitor, adding colour and lighting values which are together stored away as one separate element. All the different elements are layed separately into one frame – space backgrounds, galaxy, the TARDIS, six layers of cloud, with lighting and effects on top. The computer goes through and scans each element, a line at a time, and builds up the picture. This is a most time consuming process and should the results prove unsatisfactory, very difficult to change.

How does the sequence carry on from there?

The TARDIS disappears into the centre of the galaxy and we achieve an effect of the galaxy breaking up, and mix to the face of Sylvester McCoy. For a brief period he smiles and winks and then melts into the background. There's an enormous explosion in the centre of the screen, which thrusts forward rocks and stars, very effectively forming the tumbling blocks of the 'Doctor Who' logo. We tried to get the words to fly over our heads, so that you see them coming forwards and turn and follow them as they go away. And that's essentially it – going to white for a mix to the studio recording. Then the music is laid on top, and I'm not sure if there'll be any sound effects, but I think they may be beneficial.

The different Doctors' faces have been fed into the title sequences in various ways. What did you do with Sylvester McCoy?

We had a photo session quite early on. We took a photographer down to the studio and got Sylvester to sit down and pose. We had two versions, one normal and one where we painted his face silver, so that he would be less obtrusive on a background of space. We ran into problems there, because in the original sequence, his face was kept fairly minimal in the background. But it really wasn't strong enough for the purposes of a title sequence, so his face had to be made immediately recognisable.

Oliver Elmes with the new logo



So it was a series of photographs?

Yes, three photographs. Three expressions – bearing in mind there's not a great deal of change in the time you look at someone wink or smile.

Was it your idea to have the Doctor winking?

I don't know. I've got an idea he's always winked, hasn't he?

No. I'm sure in the past they've been fairly static. Just one fixed picture.

Well, maybe this was the producer John Nathan-Turner's idea. The wink and the smile. We had to play around with that on HARRY for a while, so that it matched the music at the right time.

Sylvester McCoy in sequence



What about the end titles? What form did they take?

There we had to keep to a minimum involvement because the money just wasn't available. Initially we had a very simple space background, but rightly so in my view, the producer wasn't very happy with the result. So we found a bit more money for that, and CAL Video realised our predicament, and we managed to use a lot of the elements from the beginning, taking them directly off the computer, and manipulating them on a different set up called HARRY. That is a digital edit suite, where you can change and edit a piece of videotape without losing any quality. Normally when you copy or edit tape, you lose a certain degree of resolution, but HARRY takes all the visual information digitally, and you can play around with it as much as you like, in any

number of runs, before you record it. At the end of the day, all you've lost is one generation from the original tape to the final edited one. The new end title sequence, combining some of the more interesting elements, was more acceptable to the production office.

How did you approach redesigning the logo?

A year ago, when I was initially briefed to work on the last Colin Baker series, I had a few ideas, and I kept the drawings. I had a couple of designs, variations on the same theme really. I thought *Doctor Who* is not true space fiction. I feel it's like an animated comic – it's the imagination run riot. You don't have to be too specific. The 'WHO' part is chrome, surrounded by an orange glow, and the 'DOCTOR', in bright yellow and orange, is set at an angle on top.

Were you aware of the implications in redesigning it – that all the merchandising relating to the show, including the Doctor Who Magazine, would have to carry the new logo?

Yes. While I was doing it, I was thinking of applications for it apart from the actual title sequence. I wanted to put more colour into it than usual so that it would look good in print work or on T-shirts, whatever. I did a bright colour one and a black-and-white version.

Oliver Elmes work will soon be very familiar to *Doctor Who*'s followers, when it is transmitted in September with episode one of *Time and the Rani* – the first of many transmissions. Our thanks to Mr Elmes for his assistance. ●

JULIA SMITH

interview

Many of *Doctor Who*'s directors have gone on to greater things, perhaps none more so than Julia Smith, who has crowned thirty years in the industry with her creation of *EastEnders*. She directed *The Smugglers* and *The Underwater Menace* in the mid-Sixties.

Julia Smith has a reputation for being a formidable character – ruthless, even merciless, but an extremely competent professional. Would this just turn out to be an image the press had invented for her? The ‘Godmother’ of *EastEnders* appears a very ordinary woman. Someway into her fifties, she dresses simply, has a somewhat windswept quality, but

very shrewd eyes.

She didn't seem too amazed that we wanted to talk to her about *Doctor Who*, which she had worked on twenty years ago, but admitted she could not remember a great deal. She worked on *The Smugglers* with William Hartnell and *The Underwater Menace* with Patrick Troughton. What differences did she recall working with the



Above: A tense moment for the Doctor, with Polly (Anneke Wills) and Ben (Michael Craze) in *The Smugglers*, when they find themselves transported back to the Seventeenth Century, to become involved with smugglers, pirates and a search for treasure. **Right:** Fish People in *The Underwater Menace*.

two men?

"William Hartnell was remarkable. As a director you work out actors' moves before going into rehearsal, in order to get a variety of shots, and I remember asking William Hartnell to cross to the TARDIS and press a particular button and he went raving mad: 'I can't. If I do that, this'll happen to the TARDIS and that'll happen to the TARDIS!' And he gave me a quarter of an hour's dissertation of why he couldn't press that button.

"I stood there, very young and very nervous, and took this broadside about the insanity of women drivers almost. It was obviously so real to him. He'd committed himself to the character and acquainted himself with all the machinery, which in those days was very much simpler than it is now. Compared with all the advances in technology over the years, William Hartnell's TARDIS must now look pre-historic."

Despite Hartnell's irascibility, Julia Smith obviously looks back on him with great fondness, as she does his successor. "Patrick Troughton was quite obviously very different in both appearance and shape — he wanted to bring another quality to the part, a slightly humorous, muddle-handed element. I enjoyed working with him very much."

The *Smugglers* was one of the last *Doctor Who* adventures based purely in Earth's history, without science-fiction overtones. "As a viewer I used to enjoy the mixture of sometimes scientific ones and sometimes historical ones, but I preferred working on costume drama, as I'd spent a long time in classical theatre."

Unusually, *The Smugglers* involved a great deal of location filming. Where had it been shot and who had planned it? "We went down to Cornwall to do it because I knew the area very well. At that time you could still find long stretches of cliffs and coastlines without a house in sight. And also caves, which we needed for the pirates' lair.

"It was set round about the Cromwellian period, I don't remember exactly, and I enjoyed it immensely, because I've always been interested in the history of buildings. I had a bee in my bonnet, because when we had to find a pub exterior, I insisted we use an old barn, because pubs in those days were far simpler, far more rustic. So we surprised some farmer, by saying, 'Please, sir, Can we use your barn?' and we dressed it up and put a pub



JULIA SMITH

interview

◀ signpost in the middle of a muck heap."

Other modern-day objects were converted very successfully by the designer by using period detail – for example a modern fishing vessel became the pirate captain's boat. Julia Smith was delighted with the result but recalled that it was not all plain sailing.

"We left Newlyn harbour and it seemed fairly calm in the bay, but when we got out farther, oh brother... It was drizzling and all the actors were sitting there with plastic capes on over their costumes and the pirate captain, who was quite a dandy, had a hood over his beautiful ringlet wig. And this picture sticks in my mind of a bright green face peering out from the hood, being sick over port. Those are the sort of things one remembers – the giggles one got out of it."

The Smugglers was William Hartnell's last major contribution to *Doctor Who*, coming at the end of the series' third recording block. His appearance in *The Tenth Planet* (recorded some time later) both contractually and on screen, was as little more than a guest star. Did Julia Smith remember Hartnell's illness and frailty, or any other reason for his departure?

"Not really. I know he wasn't very well and I treated him as I did John Slater on *Z-Cars*, who had a bad heart. You knew it was sensible to protect him and not demand too much of him. You didn't make him run up and down stairs, or wade through rivers. I suppose that's for example how they work with Joan Hickson as Miss Marple now. You just don't stretch the old ones too far."

Last year, when we spoke to another director, Hugh David (1986 *Summer Special*), he said he'd refused to direct a script he was offered, because he thought it impossible to realise convincingly on a *Doctor Who* budget. That story, *The Underwater Menace*, still went ahead and was directed by Julia Smith. How did she get around the problems?

"All the underwater sequences were a problem, but we got by with trickery.

We used the tank at Ealing to do a certain amount of trick work, but I must admit, I remember less about that one. I know we had great fun designing mermaid-type costumes and that we had hundreds of letters from little girls, asking if they could have the costumes."

It is not very highly regarded as a story and has been criticised for its corny dialogue and hammy acting. Julia Smith commented diplomatically, "I think that *The Underwater Menace* depended more on action and trickery than it did on acting and performance. *The Smugglers* had de-



The Underwater Menace

pended more on the performers

"As a director, you encounter better and worse scripts, and I might make some quiet comments about them, but you have to believe totally in what you're doing, because you have to sell it to the actors and give them support, help and enthusiasm to go ahead with the project."

At the time of *The Underwater Menace*, Troughton's third story, the development of the show and the Doctor's character seemed to be very unsettled. "I remember there were awful arguments about that time about how Patrick Troughton should play the part; whether he should be allowed to play his flute or not, quite how Quixotic the character could be.

"We all put forward our suggestions. It was the first time anyone had grappled with the problem of changing the

lead actor. Now it's become a sort of convention and Doctor Whos have come and gone at quite an alarming rate!"

Julia Smith spent many years as a director with the BBC. As well as her eight episodes of *Doctor Who*, which she described as, "a working holiday", she directed many editions of *Dr Finlay's Casebook*, *The Newcomers*, the BBC's major soap opera of the Sixties and a very highly regarded adaptation of *The Railway Children*, which launched Jenny Agutter's career, and inspired Lionel Jefferies'

comparatively inferior cinema version.

In the mid Seventies, Julia Smith worked on the twice-weekly run of *Angels* – another popular prime-time soap, about student nurses. It was through *Angels* that she finally accepted the mantle of producer. "They'd tried to make me one for a long time but I'd resisted them. After a couple of years, *Angels* seemed to have lost its thread. It'd had gone too much outside the hospital and lost a lot of its impact.

"I'd worked on the main team of directors since the beginning and they thought I would be the best person to make producer and get it back onto the right rails. So I was cajoled, bullied, call it what you like, and then I became interested in it. I made it more of a serial, up-dated the whole feel of the



The Smugglers

show and dealt with controversial issues – and that's when it really took off."

Hot on the heels of *Angels*, Julia Smith created another successful medical drama, *The District Nurse*, starring Nerys Hughes. And after that, she began planning one of the BBC's greatest gambles – a new twice-weekly soap called *EastEnders*.

It was a massive undertaking, considering that a whole East End community had to be created. A suitable location, over thirty characters, and sufficient storylines for years to come all had to be dreamed up. Together with Tony Holland, a long-standing friend who was appointed her script-editor, Julia Smith flew to Lanzarote for a week to formulate her new series.

"We went there to be clear of phones and pressures. We wrote details of every character from their birth to the moment *EastEnders* began. Each character has his or her own biography in a seventy-five page document, which is kept under lock and key in my office. We also wrote the first two years of storylines, which we have just worked through now. It was all there on paper from the start – Angie and Den's marriage problems, Michelle's baby, Den's mistress, Jan, Lofty's marriage to Michelle and the cot death of Sue's baby."

The success of *EastEnders* was sudden and enormous. It elevated unknown actors to the status of stars and put a tremendous burden on the shoulders of the production team. "I thought originally that if we reached an audience of thirteen million within two

years, then I would be happy. The fact that we got twenty million within a few months was amazing. But being Number One, we have to stay there. This is why I think the whole process of becoming national figures for the cast has been an enormous step. I knew the possibilities and talked to them all at length beforehand. But talking is one thing and doing is another.

"But I never think we have got it right. I am always thinking of ways to improve the show. In fact, I find myself never thinking of the past or the present – only of the future."

As we were about to close the interview, she got up and rushed across the room to some shelves. "Wait a minute. I've got the cast-lists over here, come to think about it." By now she had obviously worked up some enthusiasm for her *Doctor Who* memories. She extracted a dusty old volume, a scrapbook in which she had painstakingly catalogued all the programmes she had worked on. It began in the late Fifties, and listed titles, dates and casts in faded but careful handwriting. Several pages in appeared the title, 'Doctor Who and the Smugglers' and she inspected the cast with some alarm. "Half of them are dead now!

"We had a wonderful cast. George A. Cooper who's now in *Grange Hill* – he played one of the baddies, a pirate with a smooth bald head. It was very much a traditional children's idea of a pirate. In those days, one made it more with children in mind, and I think, in my humble opinion, that that was maybe its strength. Now it's much more sophisticated, but then I suppose children are, too. Then it was a case of booing the bad guy and cheering the hero, not today's maniacal obsession with equipment and technicalities.

"Hartnell must be responsible in a very large degree for the success of the whole thing – the mystique he surrounded himself with. He was pure, old-fashioned, theatrical actor-manager, with that resounding voice. But he did leave this feeling of remoteness, of being larger than everybody else. I think that's a quality the programme lacks now; I can no longer believe in *Doctor Who* as a super-being.

"Where have they got to now? How many episodes of *Doctor Who* have there been?" she asked.

"Somewhere around seven hundred."

"Ah!" she cried with delight, "In a year or two, *EastEnders* will've beaten them." ♦

SIX OF THE BEST-A T



PATRICK TROUGHTON

The appearance of the Second Doctor resulted from lengthy debate between Troughton, producer Innes Lloyd and script-editor Gerry Davis. He wore a shabby black frock coat, several sizes too big, and a scruffy white shirt. His trousers were also extremely baggy and, like his bow-tie, were fixed by a safety pin! In his first two stories, Troughton's trousers were a loud orange and black two-inch check, but these were replaced by a more conservative pair. Highlighting his eccentricity, the Second Doctor was seen early on wearing a tall stove pipe hat and pixie boots. It has also been suggested that in the beginning, Troughton's haircut was a wig, but the actor hotly denied this.



JON PERTWEE

Jon Pertwee raided his family wardrobe for a suitably eccentric outfit, when asked to attend a *Radio Times* photo-call in 1969. The producer Barry Letts was so taken with his choice of clothes, the image stuck. Costume designer Christine Rawlins had been thinking along similar lines, and the Third Doctor became the most flamboyantly dressed of all. He wore a flowing, red-lined cape over a black velvet smoking jacket and a ruffled shirt with a variety of neckties. For the 1971 season, Ken Trew refashioned the look, giving the Doctor a red jacket and a new purple-lined cloak, which remained for the next two years. However, during Pertwee's last two seasons, the colour scheme of his outfits changed from story to story, although the basic look was maintained.

WILLIAM HARTNELL

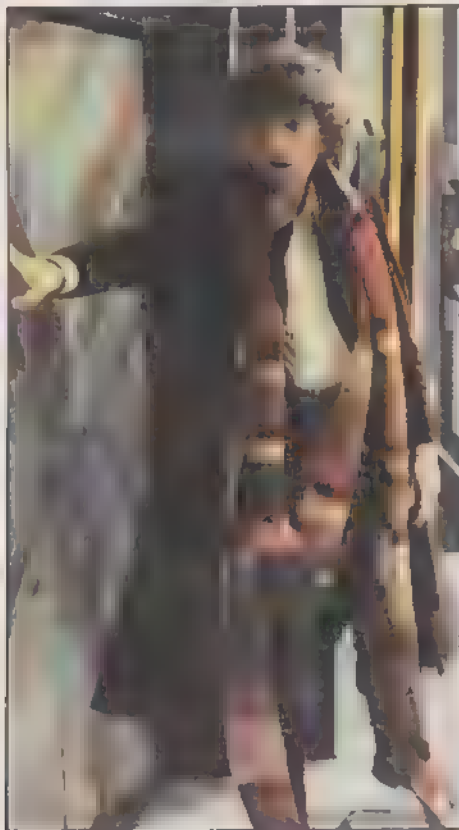
The First Doctor's costume was hired from theatrical costumiers', Nathans. As with several other Doctors, it was intended that Hartnell would have a late Victorian-Edwardian look. He wore a black frock coat and a fawn waistcoat over a wing-collared shirt. His smart, black necktie was occasionally replaced by a similar one in light check. His check trousers were tapered and firmly creased. Completing the image, Hartnell wore a long white wig throughout his tenure and a ring with a large blue stone. From time to time, he was also seen with a monocle, a carved wooden cane, an opera cape and scarf, and a hat in Astrakhan fur.



THE LORD'S WARDROBE

TOM BAKER

Tom Baker and Barry Letts considered many ideas for the Fourth Doctor, before arriving at the theme of a Bohemian and over seven years, the longest lasting Doctor was understandably to have the most changes in costume. His original red coat with patched elbows was replaced by several versions in tweed, dark brown and burgundy. The Fourth Doctor sported a wide variety of patterned cardigans and waistcoats: his trousers were usually a light tweed material; and he occasionally wore knee boots. Tom Baker's trademarks were the broad, floppy hat and an endless multicoloured scarf. In 1980, John Nathan-Turner instructed June Hudson to design a completely new costume in burgundy – to lend the Doctor uniformity.



COLIN BAKER

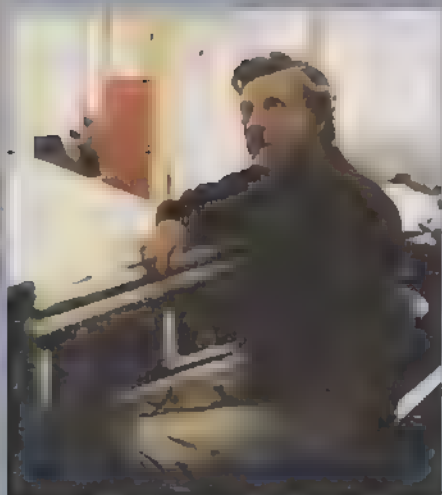
'Totally tasteless' was the brief given to costume designer Pat Godfrey, to reflect the brash character of the Sixth Doctor. However, her first sketch was just too good and she required several attempts before she arrived at one sufficiently garish. The Sixth Doctor had a coat shaped like Davison's, but at various points it was pink, green, yellow, purple and black! He had yellow and black striped trousers, green shoes with red spats, a shirt with question marks, a check waistcoat, a turquoise necktie and a cat badge. The future Doctor seen on the *Hyperion III* wore a stripey waistcoat and a yellow tie speckled with stars.

PETER DAVISON

In devising the Fifth Doctor, John Nathan-Turner was inspired by a picture tacked to his wall of Peter Davison at a cricket match. The essence of an Edwardian cricketer was the brief handed to Colin Lavers, who came up with the Fifth Doctor's unique costume. It comprised cream, Regency-style long coat and red-striped pyjama-like trousers, a white shirt with red question marks stitched into the collar and a V-necked cricket jumper. The outfit was topped off with a cream-coloured hat and decorated at the lapel with a stick of celery. Unlike previous Doctors, Davison retained the same outfit throughout his reign.



BEHIND



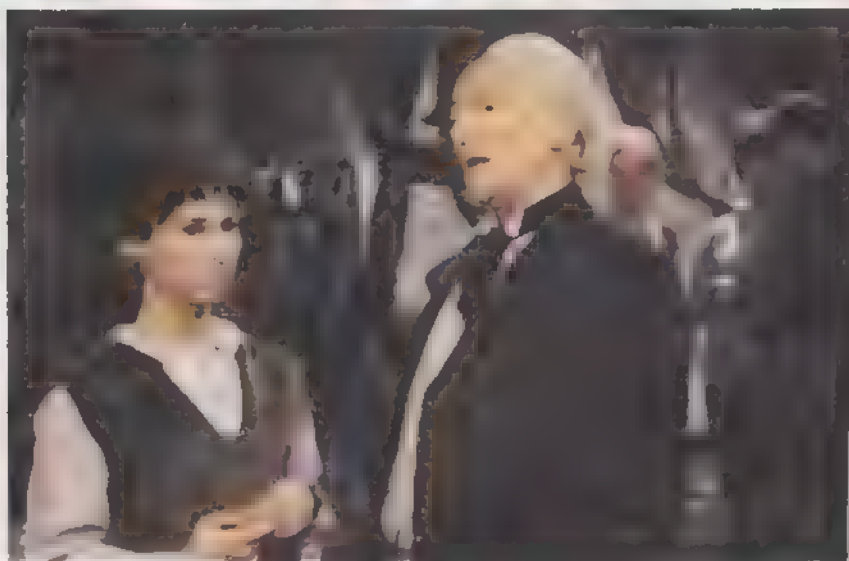
Patrick Mulhern

In words and exclusive pictures from his private collection, Raymond Cusick, one of *Doctor Who*'s first designers, takes us on a trip down Memory Lane.

Ray Cusick is one of the BBC's most distinguished senior designers. He joined the senior BBC Design Department in 1960, having spent three years in repertory theatre. Starting as a design assistant, he was a fully-fledged designer within two years. He worked on many of the BBC's early shows and situation comedies, before joining *Doctor Who* in late 1963.

Ray began work on the fifth episode into production, *The Survivors*, which was to introduce his proudest creation, the Daleks. Following their success, Ray was asked to return many times over the next two years, when he dreamt up a wide range of imaginative sets and models. At the time, he was cultivating an interest in photography and took his camera everywhere: "I was photographing everything in sight. I had my camera hanging round my neck all the while."

He also took it on the *Doctor Who* set, where many of his superb set designs were being constructed. Fortunately, he still has these photographs today and they provide a fascinating insight into what went on behind-the-scenes in the early days of *Doctor Who*. They were taken during rehearsals, and are quite revealing about the environment in which the cast and production team were working. Here we present a selection of some of the best photographs from Ray's collection – from *The Daleks* to *The Dalek Master Plan*.



THE SCENES



*Above: The Doctor argues with the Thals in *The Daleks*.*

The other photographs on these pages are a sequence of shots taken during rehearsals on keys of Marinus, showing in one photograph William Hartnell without his half-wig, while in another, a cable twists among the floor coverings.

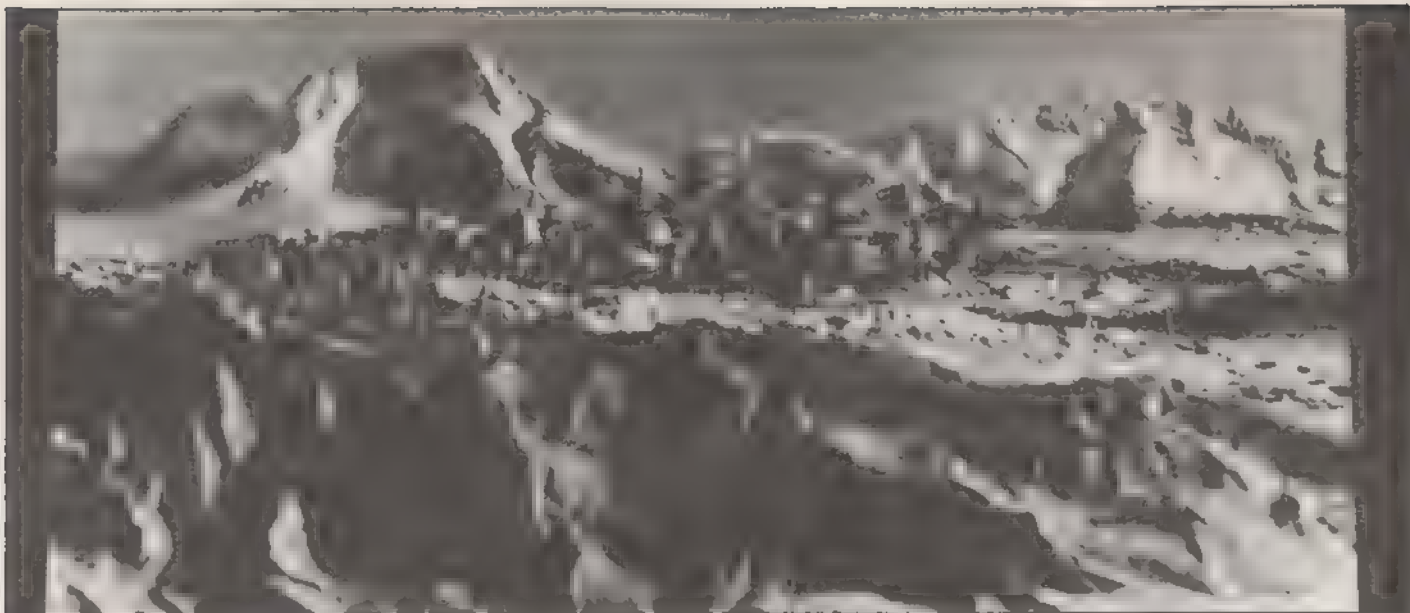


THE DALEKS

'All the models I designed were subcontracted to an outside company called Shawcraft Models. I discovered very early on that you had to give them very elaborate drawing. The model they made from my first sketch of the Dalek city was totally wrong. I showed them how they could achieve the right effect just by going to Woolworths and buying an assortment of plastic containers, cutting them up and spraying them. The second model was very much better. It was quite big, about 20-foot square, mounted on a rostrum, including the mountainous background. The soil was sawdust and sand, and we allowed dry ice to waft over it for atmosphere.'

THE DALEKS

'Jacqueline Hill was rehearsing the end of episode one. Her head scarf suggests the make-up girls had yet to finish their work. I wanted to make all the archways low for the interior of the city, because it was designed for the Daleks, not for humans, who would be forced to crouch. You can see the backdrop at the end of the set; we used a lot of those to give depth to the settings. I would design them and the scenic artists would paint them onto boards or cloth.'



The photographs in Ray Cusick's collection chronicle his involvement with the series and a variety of settings and aliens, from the Daleks to the Sensorites.



THE KEYS OF MARINUS

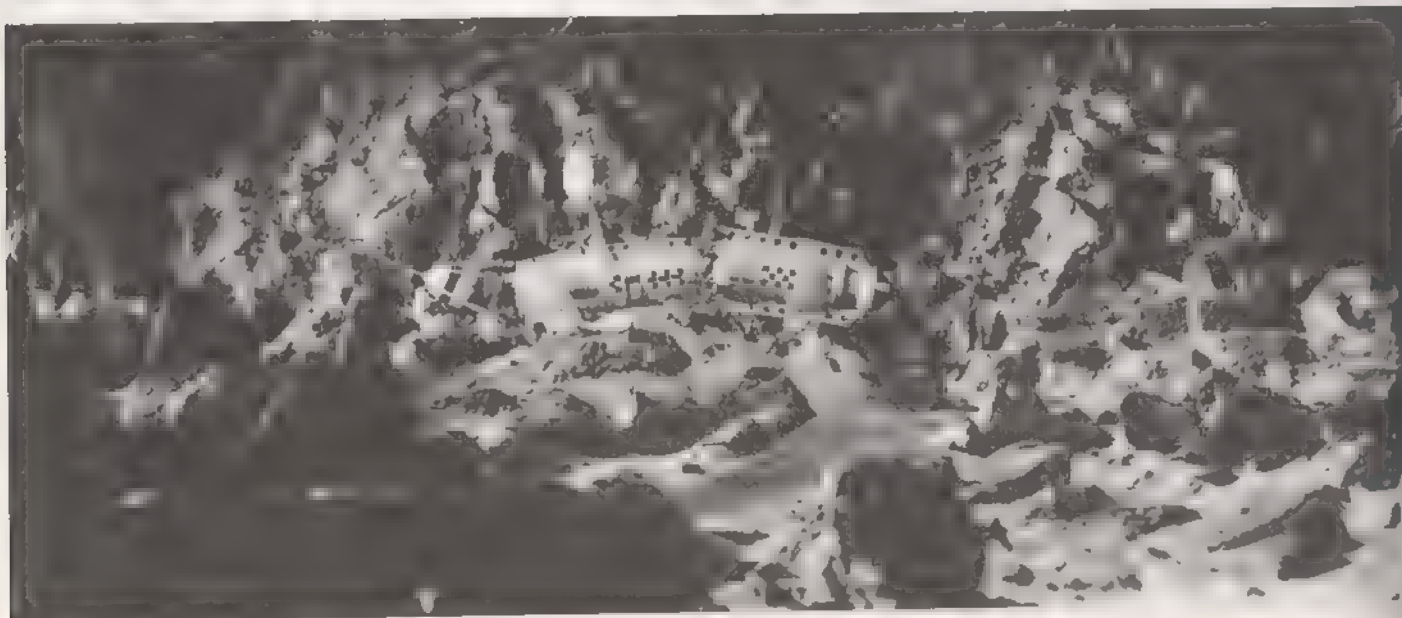
'Accidents will always happen! During rehearsals for the fourth episode, an ice bridge tied up with rope collapsed, and Verity Lambert, *Doctor Who's* first producer, came down from the gallery to ask my assistant Chris Thompson and myself, "What went wrong?"

PLANET OF GIANTS

'We never built any more than we needed – then, we couldn't afford to. I discussed the shots with the director and worked out exactly how much he wanted to see and built to that. The sink was all made from wood. That plug hole was covered with metallic paper and the set was raised a few feet from the floor, so that the actors could drop down beneath. You can see lots of joins in the set in a sharp photograph, but in those days with 405-line black-and-white television, the definition was quite fuzzy.'

PLANET OF GIANTS

'This picture shows various aspects of the giant set: a section of a briefcase, a giant fly on a cork, some poisoned seeds, and the scaffolding leading to the top of the plug chain down which the actors climbed. The floor was roughly painted to look like the contours of a wooden tabletop.'



THE RESCUE

'The floor of Bennett's bedroom was ramped to give the feeling of a wrecked spaceship. A lot of the set furnishings we hired and some we made ourselves. All those dials and radio-like gubbins we hired from a place called Trading Post. The chair in this picture is just an old studio chair.'

THE RESCUE

'I did two drawings of the space rocket. One showing it complete and intact and another as I wanted it in a crashed position. I didn't research rockets, there wasn't time. I just let my imagination run riot.'

THE ROMANS

'That was the only non-science fiction story I worked on. Again the sets had to be on a small scale. This section of a Roman galley was all that we really needed to show, and it gave the illusion of the rest of the craft existing. Note the cyclorama behind the set, masking off the studio wall.'

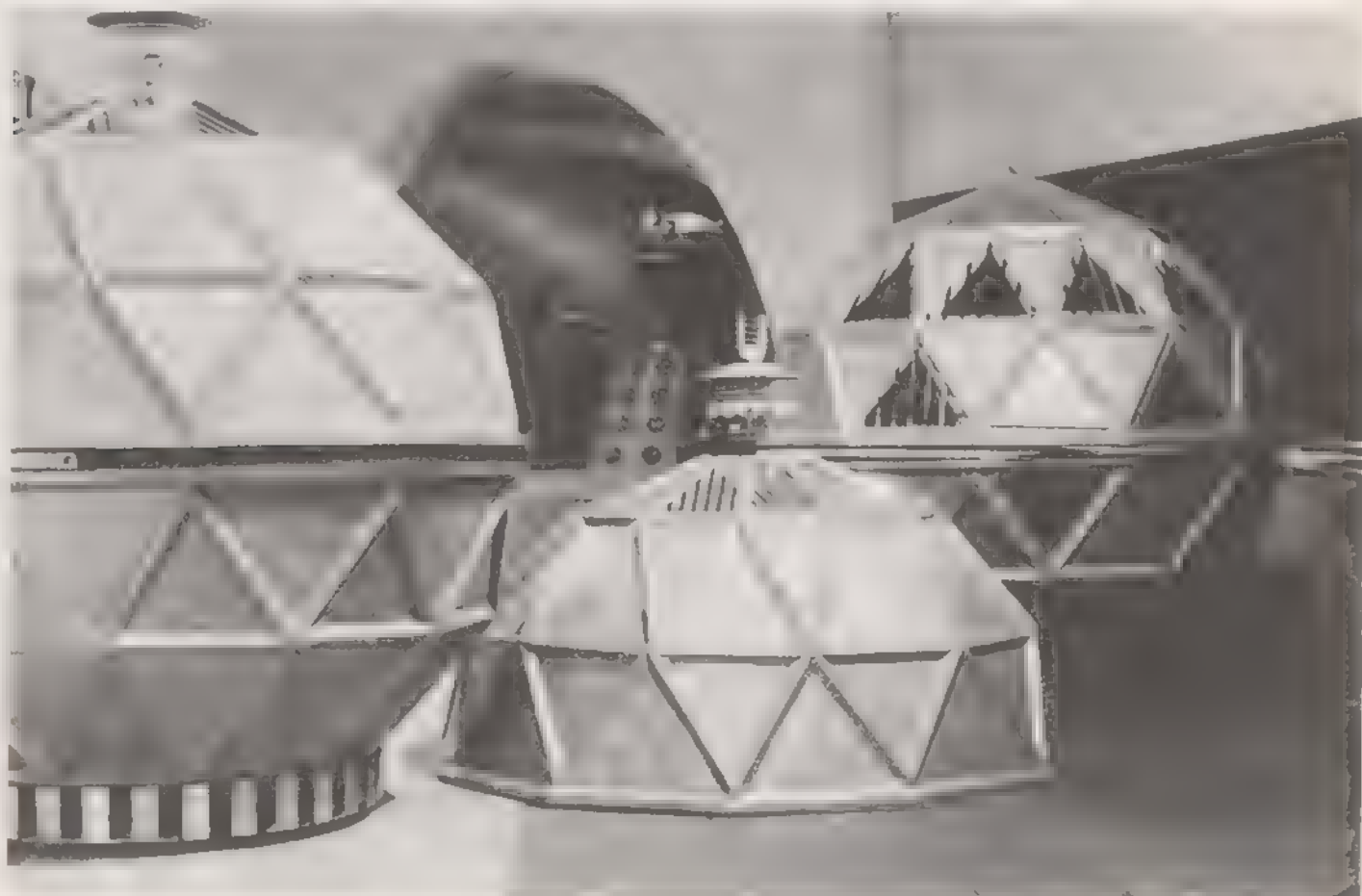
THE CHASE

'I slightly adapted the Daleks' appearance in this story, giving them metal slats around the middle sections. It was supposed to explain how they could now move outside their metal city. The design of the Mechanoids was inspired by the geodesic construction method of Buckminster Fuller, an American designer.



They were built in fibreglass in two halves. Rather like the Daleks, they had an open bottom and the operators could move them along on hidden castors. They each

had arms which sprang out from the middle, a flame gun, and when they got agitated a little aerial shot out from the top.'



THE SENSORITES

'Captain Maitland and Carol on the bridge of the Earth ship, Studio D, Lime Grove. They were acting to a camera with rotation lens facility, which enabled the operator, when the director had cut to another camera, to change from one type of lens to another. Note the overhead microphone boom and the bulkhead door suspended from the ceiling.'

THE SENSORITES

'Bill Hartnell and William Russell were running through a scene with the Sensorite leaders; there was no need for the Sensorite actors to wear their masks during rehearsal. Now I only have one item left from *Doctor Who* – a little device carved from perspex which the Sensorites carried that was supposed to freeze people.'

THE KEYS OF MARINUS

'The submersible vehicles used by the Voords to travel to the island were made in fibreglass by Shawcraft. they were quite fragile – in this picture, one still has the metal strap used to carry them into the studio.'





THE DALEK MASTER PLAN

'We built the model of the Dalek's spaceport on Kembel on a 20-foot rostrum at Ealing Film Studios. In this shot, we were lowering Mavic Chen's Spar onto the landing pad on barely visible nylon wire. I made lots of model spaceships for that story and I kept them lined up on my shelf for years. Gradually I gave them away to

children as presents, so they could play with a real *Doctor Who* spaceship. I imagine they're all broken now, or have been thrown away.'

THE DALEK MASTER PLAN

'This picture shows the exterior of the Dalek pursuit ship. For convenience's sake, the exterior backed directly onto the

control room interior, so that no breaks in recording were necessary.'

THE DALEK MASTER PLAN

'The Black Dalek stands empty under a bank of lights on the set of the Daleks' conference chamber. This took up a large area of the studio – in one of the early shows recorded at Television Centre.'



DESIGNER DALEKS

Doctor Who's most striking piece of design has always been the Daleks. They were handled by the Design Department in the early days and then Visual Effects took over in the late Sixties. The infamous creatures have appeared in eighteen stories; here are details of the changes in design and colour scheme they have undergone during this time.

THE DEAD PLANET (Five Daleks)
The original Daleks, built in wood by Shawcraft Models of Uxbridge, were identical in design and completely silver except grey shoulder units, blue skirt balls and eye-disks. Several scenes utilised full-sized photographic blow-ups to boost numbers.

THE DALEK INVASION OF EARTH (Seven Daleks)

Six were identical to the previous story, except eye-rods were black, eyeballs silver, and the bases were raised on fenders for greater manoeuvrability. Ep. 2 introduced an oddity, a Spaceship Commander with dome, antenna unit and odd skirt panels painted scarlet. Ep.3 had the same prop, now with black dome, shoulder unit and skirt panels – the Dalek Supreme.

THE SPACE MUSEUM (Two Daleks)

One identical to *The Dead Planet* and one from the following story.

THE CHASE (Five Daleks)

One Dalek Supreme and four silver props as before, but introducing the mesh and metal slats around the shoulder unit still used today. Also featured two dummy props, with no base and without new shoulder arrangement, and first use of model Daleks.



MISSION TO THE UNKNOWN

(Four Daleks)

Three silver and one Dalek Supreme with minor colour changes.

THE DALEK MASTER PLAN

(Four Daleks)

As preceding story.

THE POWER OF THE DALEKS

(Four Daleks)

Props completely rebuilt by BBC Visual Effects. Silver and blue colour scheme retained, but bodies taller and broader. Exterminator and plunger arms were simplified. Impressive model Daleks used for production line sequences. First sight of a whole Dalek mutation – a latex blob with tentacles.

THE EVIL OF THE DALEKS (Four Daleks)

Same as previous story, except the domes of two Daleks were later painted black. Appalling use of Louis Marx toy Daleks (!) during Civil War sequences. The Emperor Dalek made its one stunning appearance: it was 15 feet tall, plainer and more symmetrical than its minions. It was motionless, apart from its eye-stick.

THE WAR GAMES (One Dalek)

A battered silver prop from previous story.

THE DAY OF THE DALEKS (Three Daleks)

Same props as before, one painted gold and two dark grey. All had silver eye-sticks and plunger arms, and glossy black skirt balls.

FRONTIER IN SPACE (Three Daleks)

As preceding story.

PLANET OF THE DALEKS (Nine Daleks)

Eight dark grey Daleks, some of which were dummies. The Dalek Supreme was mostly black, but had gold dome, neck rings, shoulder slats and skirt balls, silver antennae and purple light bulbs. Mixture of model and toy Daleks used for frozen army.

DEATH TO THE DALEKS (Four Daleks)

A return to the silver colour scheme, with black skirt balls, shoulder unit and antennae. The Daleks were temporarily fitted with projectile weapons in place of their exterminators.



Above: The Emperor Dalek at the moment of explosion (The Evil of the Daleks). Left a publicity picture for Resurrection of the Daleks.

GENESIS OF THE DALEKS (Three Daleks)

As Planet Of Daleks.

DESTINY OF THE DALEKS (Four Daleks)

A battered array of greyish-blue Daleks with black shoulder slats and skirt balls.

THE FIVE DOCTORS (One Dalek)

Dark grey, similar to above.

RESURRECTION OF THE DALEKS (Four Daleks)

All were dark grey with black slats, skirt balls and antennae and white eye-sticks and discs. The Dalek Supreme was completely black with white bulbs and skirt balls. Great use made of fibreglass dummies.

REVELATION OF THE DALEKS (Four Daleks)

Two Daleks were standard black and dark grey, while two more were mostly silver with gold skirt balls, shoulder mesh and antennae. A glass Dalek (built in transparent perspex) made an impressive appearance.

special video effects

The evolution of *Doctor Who* provides an interesting document of developments in the field of video effects. Today's video technology may make some of the tricks employed in the early 60s look ante-diluvian, but the effects have generally been convincing.

TARDIS MATERIALISATION

Indisputably the most established effect in *Doctor Who* is the materialisation and dematerialisation of the Doctor's TARDIS. In the early days, it was achieved by mixing two images together in the production gallery. For the TARDIS landing, the camera picked up the first image of an empty corridor, room, etc., which was recorded onto videotape; then the tape was stopped and the camera would remain locked in position, while the Police Box prop was moved into the picture; the tape was rewound slightly and recording resumed, as the gallery operator blended the old picture with the new.

Obviously, the process was the same when the TARDIS was required to vanish, except the Police Box was removed from shot. At that time, to avoid a recording break, the effect was sometimes done more simply by fading one caption slide into another (eg *The Reign Of Terror*). The first TARDIS take-off was seen at the end of *The Tribe Of Gum*, the first model landing in *The Keys Of Marinus* and the first studio landing in *The Rescue*. Once in *Colony In Space*, a straight edit was employed so the TARDIS simply popped out of sight without fading. Nowadays, the effect is always done in post production, blending two separate takes – one with the TARDIS in camera, and another without it.

DALEK EXTERMINATION

A crude but effective method originally, in which the camera's aperture was opened too wide, thereby admitting more light than the electronics could cope with. This resulted in a negative image of the whole picture appearing on the tape, until the aperture was reduced again.

It was first used in episode two of *The Dead Planet*, when Ian was shot by a Dalek, and has been featured many times since, although in recent years, the negative effect has been

limited to the victims' bodies only. A device known as a negative picture amplifier also came into use in the 60s, but with the introduction of colour television, directors were able to use a device called a complimentary picture amplifier to achieve the negative effect.

INLAY EFFECT

This process, which has been in use for many years, results in a composite picture, by combining the different elements received from two cameras or two pieces of videotape. A rostrum camera is brought into use to generate a key signal, a simple black and white block representation of the two different pictures: ie. the section required from one picture is represented by a black block; the section from the second becomes a white block. This signal is fed into a video switch, which will effectively combine the two picture segments, using the key signal as a template. The methods of generating these keys have improved over the years, but the technique remains the same.

An early composite was used when, in *The Daleks*, the first Doctor looked down from a rocky ledge (studio camera) onto the distant Dalek city (pre-recorded model shot). Inlay was used again many times: in *The Rescue*, when the Doctor perched on a ledge overlooking the Sand Beast, and in *The Time Meddler*, when the Monk looked in through the doors of his miniaturised TARDIS.

CYBERMEN WEAPONS

The Moonbase featured the first use of a filmed optical effect, as the Cybermen fired their laser cannon at the humans' protective dome. The laser beam, a piece of animation, was filmed separately to match the live action film, and an optical printer made a third piece of film which combined the two.

When the Cybermen stunned people, a spark of electricity shot from their hands to the victims' heads. A camera was trained on a spark machine, which produced a wave of electrical charge between two poles, and this was laid into the studio image by a vision mixer.

In the case of Cyberguns, which were *lethally* effective, a soft focus image of a candle flame was superimposed over the victim's body, as smoke was pumped through the actor's costume. These two effects were widely used in *The Moonbase*,

The Tomb Of The Cybermen and *The Wheel In Space*. The Cybermen dealt death from their chest units in *The Wheel In Space* and *The Invasion* – which resulted in the same negative effect associated with the Daleks.

THE ICE WARRIOR WEAPON

The Ice Warriors are armed with sonic blasters – short barrels which are moulded into their forearms. The way their victims appeared to crumble and distort in their first two stories was all done with mirrors! Highly polished foil was stretched very thinly over a frame, forming a perfect mirror. The camera then focused on an actor's reflection in it, which could be made to wobble violently when the foil was pushed gently from behind.

QUARK GUNS

An intriguing effect, used only once for the graphic death of a Dulcian girl. A shot of the girl running was followed by a close-up still slide of her face. A similar slide followed, in which her face and neck had been masked off, and filmed footage of a layer of oil on water being rippled was substituted, giving a flesh-searing effect. It was complex and too costly and in subsequent episodes a simpler method was adopted: tubes through which smoke could be pumped were concealed in the actors' costumes.

BACK PROJECTION

A very cheap method of supplementing a picture, the projection from behind of a still or moving image onto a plain white background, was first used in *The Dalek Invasion Of Earth* during Barbara's journey to Bedfordshire. It was used again many times in the black-and-white shows, when it was less detectable, and some better examples were the stormy sky background on the clifftops in *The Time Meddler* and the park and jetty in *The Enemy Of The World*.

COLOUR SEPARATION OVERLAY

The advent of CSO in the early 70s made life much easier for production crews. CSO is also known as Chromakey outside the BBC. It is an electronic process, which allows one image to be laid onto another. If an actor stands on a CSO set (ie. in front of a coloured curtain), he can be electronically superimposed onto any other camera source, be that another

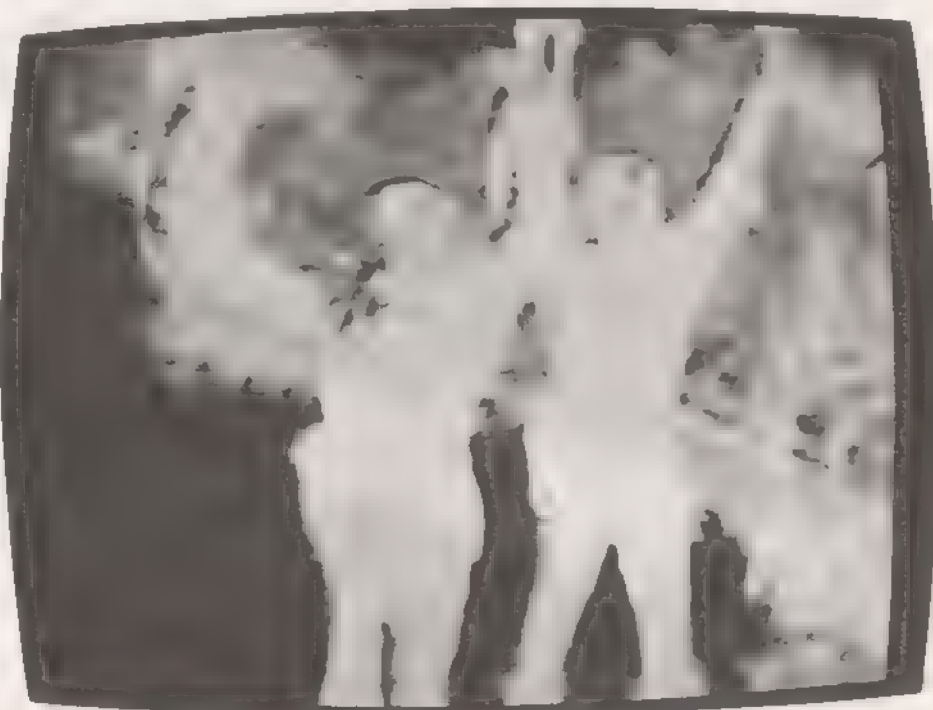


set, a model or a caption slide.

This is how it works: the colour information from the camera is matrixed to produce a black and white key signal to be fed to a video switch. The nominated CSO backdrop, normally blue, becomes black and all other colours in the picture become white. This key signal is then used to combine the original CSO camera's picture with any other background.

Examples of CSO at work: to insert pictures into video screens in *The Ambassadors Of Death*, *Colony In Space*, etc.; to superimpose the

expanding Azal in the cavern in *The Daemons*; to blot out Omega's face in *The Three Doctors*; to provide a star background through the glass perimeter of *The Ark In Space* and the ceiling of *Hyperion III* in *The Trial Of A Time Lord* 9-12; and to render the void white in *Warriors' Gate*. Any effects involving the TARDIS's blue Police Box exterior necessitate the use of another colour, usually green. Often CSO is extremely effective, but sometimes it produces a blue haze or fringe around its subjects; it reached a disastrous nadir in *Underworld*. Meg▶



◀los saw the innovation of Scene-Synch – a method of linking together the pan and tilt movements of two cameras electronically – so that the camera could follow the steps of the Gaztaks by the screens of Zolpha Thura, rather than remaining static.

OPTICAL EFFECTS

When WOTAN began its hypnotic process in *The War Machines*, an electronically generated concentric pattern was superimposed over the live studio picture. In *The War Games*, contra-rotating polarised slides lit from behind provided the spiralling pattern issuing from the Alien guards' guns, and a different pre-filmed pattern of pulsating rings signified the Time Lord's force field.

The White Robot's chest guns in *The Mind Robber* effected a piece of swirling animation, generated by a whirling light box prop; a similar pattern heralded the appearance and disappearance of the Karkus. Less mechanical methods could be employed in the colour episodes, such as a Chromascope used in *The Day Of The Daleks* for the shimmering tunnel pattern of the time travel devices.

TRICK CAMERA LENSES

All sorts of lenses can be put onto the front of TV cameras to manipulate the picture received. Very memorable was the kaleidoscope effect when the Time Lords sentenced the Second Doctor at the end of *The War Games*. His face appeared large in the centre of the screen, but a multiple image lens allowed several smaller shots of his face to rotate around the main picture. A similar rotating lens was used in *The Day Of The Daleks*, when Jo Grant was seen spinning through the time vortex.

By simply fitting a dark blue filter over the lens, a production crew can film night scenes in broad daylight. This is commonly known as day-for-night filming, and was first used in *Doctor Who* in *The Smugglers*. It is only moderately effective, as the sky always appears as an unnaturally light blue, viz, *The Stones Of Blood*.

MATTE SHOTS

Matte shots or glass shots have been widespread in *Doctor Who*. They are highly detailed paintings or photographs placed in the foreground of a set (or added in post production), generally used to enhance an establishing shot. In this way, the houses in

Pudding Lane gained an upper storey in *The Visitation*, the Tomb of Rassilon gained a high vaulted roof in *The Five Doctors*, and Winsor's lab in *The Claws Of Axos* was surrounded by a mock-up of a nuclear reactor.

LASER BEAMS

Laser beams and light rays are added to videotape days after recording in post production. The techniques used today are carefully cued with the timecode and are very complex. We shall be reporting more fully on this sophisticated branch of video effects in a future issue of the **Doctor Who Magazine**. A fairly simple method, common in the 70s, employed an ordinary black and white inlay camera focused on a light box.

A light box is just an illuminated screen on which the inlay operator/video effects supervisor would place two pieces of card close together, so that a thin white line is just visible. This beam would be lined up with the action on tape, between the gun nozzle and the point of contact (the victim). The supervisor would momentarily mask the beam with another piece of card, run the tape and at the moment when the weapon fired, would remove his card and expose the beam onto the tape.

QUANTEL

The Quantel unit was introduced to the BBC in the late 70s and helped in the production of many amazing effects which could never have been contemplated before. It is a computerised system which can manipulate and distort a camera's image at the touch of a button. It was first used in *The Leisure Hive* for the very impressive shot zooming out from Brighton beach – a shot which was then made to recede into a moving picture of outer space.

Quantel can pull pictures in any direction; it allowed the startling cliffhanger in *The Leisure Hive* when the picture zoomed into Tom Baker's screaming mouth, and the extreme close-up of Tegan's eye in *Kinda*, when she was drawn into her own mind by the Mara. There are now many more sophisticated picture manipulating devices at the video effects supervisor's disposal.

PAINT BOX

Quantel was one of the forerunners of the image processing devices, and was the pioneer of the paint box,



which has been very useful to video effects men. The paint box is an electronic painting system which allows visual wizards to alter all elements of a video image in any way with an electronic stylus and palette.

A television picture is composed of thousands of tiny dots; each of these forms part of a bit pattern matrix in the memory of the paint box's computer. Just as a normal VDU display can be readjusted, so can the components of the TV image be reconfigured.

Our thanks to BBC Video Effects Designer, Dave Chapman, for his invaluable advice.



JUNE HUDSON



COSTUME DESIGNER

Many costume designers have contributed to *Doctor Who*. One, June Hudson, is remembered with special affection for her superb work between 1978 and 1981.

Born in Banbury, Oxfordshire, June Hudson was educated in High Wycombe and studied later at the Royal College of Art. She began working in the theatre as an associate designer to Oliver Messel and, after a period in films, joined the BBC as a costume designer in 1966, where her first major production was Zola's *Germinal*.

June has been responsible for the costumes on a number of major drama productions, from *Dr Finlay's Casebook* and *The Onedin Line* to *The Revengers Tragedy*, *Nicholas Nickleby* and *Doctor Who*. More recently she has worked on *The Comedy Of Errors* and *Much Ado About Nothing* in the BBC Shakespeare series.

Earlier this year, June discussed her days with *Doctor Who*.

DWM: The first *Doctor Who* you worked on was *The Ribos Operation* in 1978. It's been reported that a lot of the sets and costumes were borrowed from the BBC's recent production of *Anna Karenina*. What do you remember about that?

June Hudson: I don't know about the sets, but the costumes were all totally original. The whole story had a Russian flavour, very heavy-looking robes, which in fact were quite light. That was Mary Tamm's first story and she needed to look extremely serene and elegant, so I gave her this multi-layered white dress with a long flowing train.

You were also involved in *Destiny Of The Daleks* and designed Lalla Ward's first costume. It was designed to resemble Tom Baker's costume, wasn't it?

Yes, that's right. A pale pink outfit which echoed Tom's. It's hard to say whose idea that was – it just evolved from discussions. It was a magic time when he and Lalla were together. She was a delight to design for. Because she was child-like, she had a very good figure and she could wear anything. She liked children's clothes – she had a schoolgirl's outfit in one story, and an Edwardian bathing costume when they went to Brighton.

At about the same time, I did *Creature From the Pit*, with Myra Francis, who also has a marvellous figure. Her costume was very tight fitting – a purple material ribbed in PVC. Roger Oldhamstead actually took a cast from Myra for part of her costume.

Roger Oldhamstead?

He and I work together a lot. He'd worked for fifteen years in the English National Opera as head of props and he used to make all kinds of amazing things for the operas. I was able to be much more adventurous and imaginative knowing Roger, because all the things that I'd wanted to do and could find no-one to make, he could make. It's a bit like being a composer. I mean, it's no good composing something if nobody can play it or interpret it properly.

Creative suppliers, people who actually make costumes for us, are vital to designers. It is very important to get the right people to interpret your designs properly. Roger had a knowledge of making things not only on a big scale, but on an exaggerated scale, which is what's needed on *Doctor Who*.

He could also make them light, wearable and safe. That's a very important side to our work, with all costumes, particularly monsters'. You can't use metal or sharp materials, which might stick into the actors' eyes or skin. You try to make sure they're not in any way restricting or uncomfortable. They must also be non-flammable.

That must present a few problems.

It's a question of experience. Years ago on *Blake's 7*, someone made some helmet visors for some security guards from expanded metal – you know the sort which can be slit and pulled out in strips. It was razor-sharp and he'd made the visors out of it! The actors who had to wear them were required to roll downhill and there was just no way that we could use them. In the end, the director said, 'We won't waste them. We'll stand them at the back and they won't have to do anything.'

What materials went into the Nimons' costumes?

Roger made their three head-pieces out of very expensive material from a company in Germany called Zeta. It was a strange stretch material, which looked sweaty and black, and worked very well, because it had a two-way stretch, so that the head could turn without a wrinkle.

The artists who wore them had to stand on sandals with twelve-inch lift soles and they were lethal to walk on. The director cast ballet dancers. They needed people who had a good figure and could move about gracefully, because the bottom half of the Nimons ▶



*With Tom Baker,
'a lovely man to work with'.*



*Jacqueline Hill,
Looking very regal in MEGLOS.*

◀ consisted of black tights and a gold pleated front. They had to try to move gracefully in these dreadful hooves we'd given them. That was quite a feat!

How closely do you have to work with the other design departments, like make-up and visual effects? Where does your work end and theirs begin?

I always rushed in and said I wanted to do the monsters. Not all costume designers do that, some are only too glad to let special effects handle it. If an artist is 'wearing' a monster, that tends to be our project. It is a costume. If it's a robot or something which has no actor inside it, then obviously it has nothing to do with us.

We also do some masks. When it would leave us and go to make-up is a moot point. They have to blend a mask in with make-up, particularly around the eyes; or build up a face – a big nose or a hairy chin.

You created some very detailed reptilian creatures – the Foamasi – for The



*Romana's costume
echoed the Doctor's.*



The Watcher & Tegan Posing!



Tegan's air hostess uniform.



With Janet Fielding, Matthew Waterhouse & Dorka Nieradzika (make-up).

Leisure Hive. Can you tell us about those?

Every show I did, I tried to find a new way of using fabric. In *The Leisure Hive*, we used a very fine chiffon sari that had been embroidered all over with sequins and put that over velvet and had the whole lot quilted, which resulted in a very exotic look. It made

the fabric look very thick and heavy, but it was in fact very light.

The Foamasi material also came from Zeta in Germany. It was really expensive and I did sail close to the wind on that one. It was a big worry and I tried to save money in other directions. The yellow robes that the people (Argolins) wore was a very

cheap material from Borowitz — it was about 60 inches wide and cost about £1.80 per metre. It was draped over the actors, so little work had to go into it. (Later on, I used the same yellow robes in *Logopolis* with black velvet capes and hoods.)

I had to decide where I was going to spend the money. If we've got three ►



Tegan's uniform again, profile.



*Peter Davison!
Looking a trifle overwhelmed!*

JUNE HUDSON

COSTUME DESIGNER

◀ lizards and dozens of people in the *Leisure Hive*, which are we going to go to town on? Obviously the monsters have got to have more impact, and that's what a lot of people are watching *Doctor Who* for.

Because the lizards were expected to do so many things, we needed a fabric which could stretch in several directions. There was nothing suitable in England, so I had to get this material, mousseline, flown in from Germany. The Foamasi heads were a bit like chameleons, with one eye looking this way and one eye looking the other, and again ambitiously, I wanted them to move about. Roger worked that out by putting a band around the actor's heads and fixing it to the eyes in the mask. Each time the actor turned his head, the eyes would move.

One of the most alarming things that directors did on *Doctor Who* was, I think, forgetting that the monsters were just paint and fabric, and the cameras used to get much too close. I got quite cross with the Foamasi and said, 'No! No! You're getting too close.' It spoilt the illusion.

Do you think they worked well?

Yes, but directors do ask rather a lot of you. In one scene these two lizards were disguised as businessmen, and they had to burst out of their suits as if they were breaking out of a chrysalis. That was very hard to achieve. The director and the producer painstakingly worked it all out, so that there was a flurry of effects and quick cutting, but what really happened was that some chaps pumped air into a green weather balloon, underneath a large suit the actor was wearing, until it swelled up and split the buttons. It was unbelievably complicated and we worked for weeks to try and get it right.

At the same time Tom Baker had a fairly radical change of costume – to his burgandy outfit.

John Nathan-Turner told me that he wanted a new look for Tom – to remodel his Doctor. I felt it wouldn't work to completely alter Tom's image at that point. How could you have Tom Baker without his scarf? Roger handled that: it was 20-foot long, hand-knitted in Chenille by his step-mother. We used a 14-ounce Melton fabric for the overcoat – a lovely,



warm, smooth, firm wool. They make uniforms from it. It was made by Morris Angels.

The design went through many many changes, in close discussion with John. It could take a whole day to decide on the right hat. John also wanted to introduce a strange shirt with question marks on the collar.

Tom had boots, and sometimes suede shoes, and Charles Socks ran off some Argylls very quickly. Tom had his own rules on what he should wear – and, after a while, got rid of the waistcoat.

How did you find Tom Baker to work with?

He was such a lovely man to work

with. So appreciative. A great sense of humour and whatever one had designed for him, he'd always give it a whirl. I adored him, and perhaps I shouldn't say this but I will, I think he was the greatest Doctor Who. To me Tom Baker was the epitome of *Doctor Who*. Wherever he was, he was always in character.

Your next story, *Warriors' Gate*, appeared a very expensive production.

Do you mean the one with the lion people? That was a lovely one. A lot was cut from that story, so you never actually saw the robots (Gundans) at their most impressive. They mainly appeared in their broken-down state, thousands of years into their future. Roger used very heavy 3mm darvik plastic, vacuum-formed over a mould, and also a certain amount of metal plating, as there was a mask inside that. That was a wonderful, expensive production.

You sound as if you got a lot of pleasure working on the show?

I love *Doctor Who*. Of all the programmes I've worked on, that has given me the greatest joy. The creative opportunities it affords you are immense. The only limitation really is money. The BBC chooses not to put much money into *Doctor Who*, and I think they should, because it has such a high reputation and is a perfect vehicle to show off the BBC's talent.

We hope that the lack of money doesn't show but it is disappointing sometimes – when they wanted five monsters and we could only afford three, or we couldn't get the materials we wanted.

You designed Janet Fielding's air hostess' uniform in Logopolis, and the Watcher, the mysterious figure that was standing in the background, which turned out to be a version of the Doctor.

I did Janet's costume in lavender, in a sort of lilac wool. It fitted her figure neatly.

Roger made the Watcher's outfit out of white cotton T-shirt material, with layers and layers of tulle – like bride's veiling – tattered and torn.

I remember saying farewell to Tom. He wrote down in my little book: 'To dear June, who never let me down, not even once.' That was lovely.

You stopped working on Doctor Who at about the same time. Why was that?



Tom advised me to. He believed he'd come to the end of all he could do with *Doctor Who*, and said perhaps I should call a halt, too.

Did you agree with him?

Well, no . . . not really. But my own department had got other plans for me and wanted other designers to have the

opportunity to work on the show. So it was just a coincidence, but I remember John Nathan-Turner was upset.

Doctor Who wasn't your only involvement with science fiction. Didn't you also work on Blake's 7?

Yes, I came into *Blake's 7* about a year after it had started – for its second season. The producer David Maloney wanted to make it look as if more money was being spent on the show, and he brought me in to glamorise the costumes. So the regulars like Paul Darrow had brightly coloured costumes, or ones in leather with studs. And it was wonderful to design for Jacqueline Pearce (Servalan), who looked wonderful no matter how outrageous her dresses were.

What shows have you worked on more recently?

I did the Shakespeares and *Androcles and the Lion* and *EastEnders*. I had to set up the original costumes for the *EastEnders* cast before the series started.

An entire wardrobe for all the characters?

Yes. I was given an allowance of £700 for each character, which had to cover all the clothes they would wear. A lot of them I tried to get from second-hand shops or from reasonably priced shops like C&A.

It must be almost as hard to come up with everyday clothes as it is to design something futuristic.

Yes and I did quite a lot of research for *EastEnders*. Going round the East End, taking lots of pictures, building up an impression of what to go for.

What are you engaged on now?

All Creatures Great and Small, which is coming back for a new series.

Have you ever considered doing Doctor Who again?

Oh, yes. I would love to work on *Doctor Who* again. As I said, no other programme really gives a designer, in any department, so much scope. I like the opportunity it gives you to work in unusual materials, to experiment with new fabrics. Yes, I would really jump at it, and it would be nice to work with John Nathan-Turner again.

Our thanks to June for the help and enthusiasm she showed in preparing this interview.

DESIGN C

STORY

The Tribe Of Gum

The Dead Planet

Beyond The Sun

Marco Polo

The Keys Of Marinus

The Aztecs

The Sensorites

The Reign Of Terror

Planet Of Giants

The Dalek Invasion

The Rescue

The Romans

The Web Planet

The Crusade

The Space Museum

The Chase

The Time Meddler

Galaxy Four

Mission to the Unknown

The Myth Makers

Dalek Master Plan

The Massacre

The Ark

The Celestial Toymaker

The Gunfighters

The Savages

The War Machines

The Smugglers

The Tenth Planet

Power of the Daleks

The Highlanders

The Underwater Menace

The Moonbase

The Macra Terror

The Faceless Ones

Evil of the Daleks

Tomb of the Cybermen

The Abominable Snowmen

The Ice Warriors

Enemy of the World

The Web of Fear

Fury from the Deep

The Wheel in Space

SET DESIGN

Peter Brachaki (1)

Barry Newbery

Raymond Cusick

Jeremy Davies (6)

Raymond Cusick

Barry Newbery

Raymond Cusick

Barry Newbery

Raymond Cusick

Roderick Laing

Raymond Cusick

Spencer Chapman

Raymond Cusick

Raymond Cusick

John Wood

Barry Newbery

Spencer Chapman

Ray Cusick and John Wood

Barry Newbery

Richard Hunt

Richard Hunt

Raymond Cusick

John Wood

Raymond Cusick

Barry Newbery (3, 4, 8, 9, 10, 12)

Michael Young

Barry Newbery

John Wood

Barry Newbery

Stuart Walker

Raymond London

Richard Hunt

Peter Kindred

Derek Dodd

Geoffrey Kirkland

Jack Robinson

Colin Shaw

Kenneth Sharpe

Geoffrey Kirkland

Chris Thompson

Martin Johnson

Malcolm Middleton

Jeremy Davies

Christopher Pemsel

David Myerscough-Jones

Peter Kindred

Derek Dodd

VISUAL EFFECTS

(as designer)

Michael John Harris

Michael John Harris and

Peter Day

Ron Oates and

Ulrich Grossner

Bernard Wilkie and

Ron Oates

None

Ron Oates

Peter Day, Len Hutton

Bill King and Trading Post

COSTUME DESIGN

Maureen Heneghan

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare, Tony Pearce

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare, Tony Pearce

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare and

Pauline Mansfield-Clarke

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare, Tony Pearce

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare

Daphne Dare

Sandra Reid

Sandra Reid

Sandra Reid

Sandra Reid

Sandra Reid and

Juanita Robinson

Mary Woods, Daphne Dare

Daphne Dare

Daphne Dare, Sandra Reid

Sandra Reid

Sandra Reid and

Dorothea Wallace

Martin Baugh

Martin Baugh

Martin Baugh

Martin Baugh

Martin Baugh

Martin Baugh

CHECKLIST

The Dominators
The Mind Robber
The Invasion
The Krotons
The Seeds of Death
The Space Pirates
The War Games

Barry Newbery
 Evan Hercules
 Richard Hunt
 Raymond London
 Paul Allen
 Ian Watson
 Roger Cheveley

Ron Oates
 Bill King and Trading Post
 Bill King and Trading Post
 Bill King and Trading Post
 Bill King and Trading Post
 John Wood
 Michael John Harris

Martin Baugh
 Martin Baugh and Susan Wheel
 Bobi Bartlett
 Bobi Bartlett
 Bobi Bartlett
 Nicholas Bullen
 Nicholas Bullen

Spearhead from Space
The Silurians
Ambassadors of Death
Inferno

Paul Allen
 Barry Newbery
 David Myerscough-Jones
 Jeremy Davies

John Horton
 Jim Ward
 Peter Day
 Len Hutton

Christine Rawlins
 Christine Rawlins
 Christine Rawlins
 Christine Rawlins

Terror of the Autons
The Mind of Evil
The Claws of Axos
Colony in Space
The Daemons

Ian Watson
 Raymond London
 Kenneth Sharp
 Tim Gleeson
 Roger Ford

Michael John Harris
 Jim Ward
 John Horton
 Bernard Wilkie
 Peter Day

Ken Trew
 Bobi Bartlett
 Barbara Lane
 Michael Burdell
 Barbara Lane

The Day of the Daleks
The Curse of Peladon
The Sea Devils
The Mutants
The Time Monster

David Myerscough-Jones
 Gloria Clayton
 Tony Snooden
 Jeremy Bear
 Tim Gleeson

Jim Ward
 Ian Scoones
 Peter Day
 John Horton
 Michael John Harris and
 Peter Pegrum

Mary Husband
 Barbara Lane
 Maggie Fletcher
 James Acheson
 Barbara Lane

The Three Doctors

Roger Liminton

Michael John Harris and
 Len Hutton
 John Horton
 Bernard Wilkie and
 Ian Scoones
 Cliff Culley
 Colin Mapson, Richard Conway,
 Ron Oates

James Acheson

Carnival of Monsters
Frontier in Space

Roger Liminton
 Cynthia Kljucic

John Horton
 Bernard Wilkie and
 Ian Scoones

James Acheson
 Barbara Kidd

Planet of the Daleks
The Green Death

John Hurst
 John Burrowes

Cliff Culley
 Colin Mapson, Richard Conway,
 Ron Oates

Hazel Pethig
 Barbara Kidd

The Time Warrior
Invasion of the Dinosaurs
Death to the Daleks
The Monster of Peladon
Planet of the Spiders

Keith Cheetham
 Richard Morris
 Colin Green
 Gloria Clayton
 Rochelle Selwyn

Jim Ward
 Clifford Culley
 Jim Ward
 Peter Day
 Bernard Wilkie

James Acheson
 Barbara Kidd
 L. Rowland Warne
 Barbara Kidd
 Rowland Warne

Robot
The Ark in Space

Ian Rawnsley
 Roger Murray-Leach

Clifford Culley
 John Friedlander and
 Tony Oxley
 John Friedlander and
 Tony Oxley
 Peter Day
 James Ward

Barbara Kidd
 Barbara Kidd

The Sontaran Experiment

Roger Murray-Leach

John Horton
 Dave Havard
 Ian Scoones
 Len Hutton
 John Horton
 Richard Conway

Barbara Kidd

Genesis of the Daleks
Revenge of the Cybermen

David Spode
 Roger Murray-Leach

Peter Day
 James Ward

Barbara Kidd
 Prue Handley

Terror of the Zygons
Planet of Evil
Pyramids of Mars
The Android Invasion
The Brain of Morbius
The Seeds of Doom

Nigel Curzon
 Roger Murray-Leach
 Christine Ruscoe
 Philip Lindley
 Barry Newbery
 Roger Murray-Leach and
 Jeremy Bear

John Horton
 Dave Havard
 Ian Scoones
 Len Hutton
 John Horton
 Richard Conway

James Acheson
 Andrew Rose
 Barbara Kidd
 Barbara Lane
 Rowland Warne
 Barbara Lane

The Mosque of Mandragora
The Hand of Fear

Barry Newbery
 Christine Ruscoe

Ian Scoones
 Colin Mapson

James Acheson
 Barbara Lane

STORY

The Deadly Assassin
The Face of Evil
The Robots of Death
The Talons of Weng Chiang

Horror of Fang Rock
The Invisible Enemy
Image of the Fendahl
The Sun Makers
Underworld
The Invasion of Time

The Ribos Operation
The Pirate Planet
The Stones of Blood
The Androids of Tara
The Power of Kroll
The Armageddon Factor

Destiny of the Daleks
City of Death
The Creature from the Pit
Nightmare of Eden
The Horns of Nimon
Shada

The Leisure Hive
Meglos
Full Circle
State of Decay
Warriors' Gate
The Keeper of Traken
Logopolis

Castrovalva
Four to Doomsday
Kinda
The Visitation
Black Orchid
Earthshock
Time Flight

Arc of Infinity
Snakedance
Mawdryn Undead
Terminus
Enlightenment
The King's Demons
The Five Doctors

Warriors of the Deep
The Awakening
Frontios
Resurrection of the Daleks
Planet of Fire
The Caves of Androzani
The Twin Dilemma

Attack of the Cybermen
Vengeance on Varos
Mark of the Rani
The Two Doctors
Time Lash
Revelation of the Daleks

Trial of a Time Lord 1-4
Trial of a Time Lord 5-8
Trial of a Time Lord 9-12
Trial of a Time Lord 13-14

SET DESIGN

Roger Murray-Leach
Austin Ruddy
Kenneth Sharp
Roger Murray-Leach

Paul Allen
Barry Newbery
Anna Ridley
Tony Snoden
Dick Coles
Barbara Gosnold

Ken Ledsham
Jan Pusey
John Stout
Valerie Warrender
Don Giles
Richard McManan-Smith

Ken Ledsham
Richard McManan-Smith
Valerie Warrender
Roger Cann
Graeme Story
Victor Meredith

Tom Yardley-Jones
Philip Lindley
Janet Budden
Christine Ruscoe
Graeme Story
Tony Burrough
Malcolm Thornton

Janet Budden
Tony Burrough
Malcolm Thornton
Ken Starkey
Tony Burrough
Bernard Lloyd-Jones
Richard McManan-Smith

Marjorie Pratt
Jan Spoczynski
Stephen Scott
Dick Coles
Colin Green
Ken Ledsham
Malcolm Thornton

Tony Burrough
Barry Newbery
David Buckingham
John Anderson
Malcolm Thornton
John Hurst
Valerie Warrender

Marjorie Pratt
Tony Snoden
Paul Trerise
Tony Burrough
Bob Cove
Alan Spalding

John Anderson
Andrew Howe-Davies
Dinah Walker
Michael Trevor

VISUAL EFFECTS

Len Hutton and Peter Day
Mat Irvine
Richard Conway
Michael John Harris

Peter Pegrum
Ian Scoones and Tony Harding
Colin Mapson
Peter Day and Peter Logan
Richard Conway
Richard Conway and
Colin Mapson

Dave Havard
Colin Mapson
Mat Irvine
Len Hutton
Tony Harding
John Horton, Steve Lucas and
Jim Francis

Peter Logan
Ian Scoones
Mat Irvine
Colin Mapson
Peter Pegrum
Dave Havard

Andrew Lazell
Steven Drewett
John Brace
Tony Harding
Mat Irvine
Peter Logan
John Horton

Simon MacDonald
Mickey Edwards
Peter Logan
Peter Wragg
Tony Auger
Steve Bowman
Peter Logan

Chris Lawson
Andy Lazell
Stuart Brisdon
Peter Pegrum
Mike Kelt
Tony Harding
John Brace

Mat Irvine
Tony Harding
Dave Havard
Peter Wragg
Peter Logan
Jim Francis
Stuart Brisdon

Chris Lawson
Charles Jeanes
David Barton
Steven Drewett
Kevin Molloy
John Brace

Mike Kelt
Peter Wragg
Kevin Molloy
Kevin Molloy

COSTUME DESIGN

Jim Acheson and Joan Ellacott
John Bloomfield
Elizabeth Waller
John Bloomfield

Joyce Hawkins
Raymond Hughes
Amy Roberts
Christine Rawlins
Rupert Jarvis
Dee Kelly

June Hudson
Rowland Warne
Rupert Jarvis
Doreen James
Colin Lavers
Michael Burdle

June Hudson
Doreen James
June Hudson
Rupert Jarvis
June Hudson
Rupert Jarvis

June Hudson
June Hudson
Amy Roberts
Amy Roberts
June Hudson
Amy Roberts
June Hudson

Odile Dicks-Mireaux
Colin Lavers
Barbara Kidd
Odile Dicks-Mireaux
Rosalind Ebbutt
Dinah Collins
Amy Roberts

Dee Robson
Ken Trew
Amy Roberts
Dee Robson
Dinah Collins
Colin Lavers
Colin Lavers

Judy Pepperdine
Jackie Southern
Anushia Nieradzick
Janet Tharby
John Peacock
Andrew Rose
Pat Godfrey

Anushia Nieradzick
Ann Hardinge
Dinah Collins
Jan Wright
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Ken Trew
Dorka Nieradzick
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Shaunna Harrison



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